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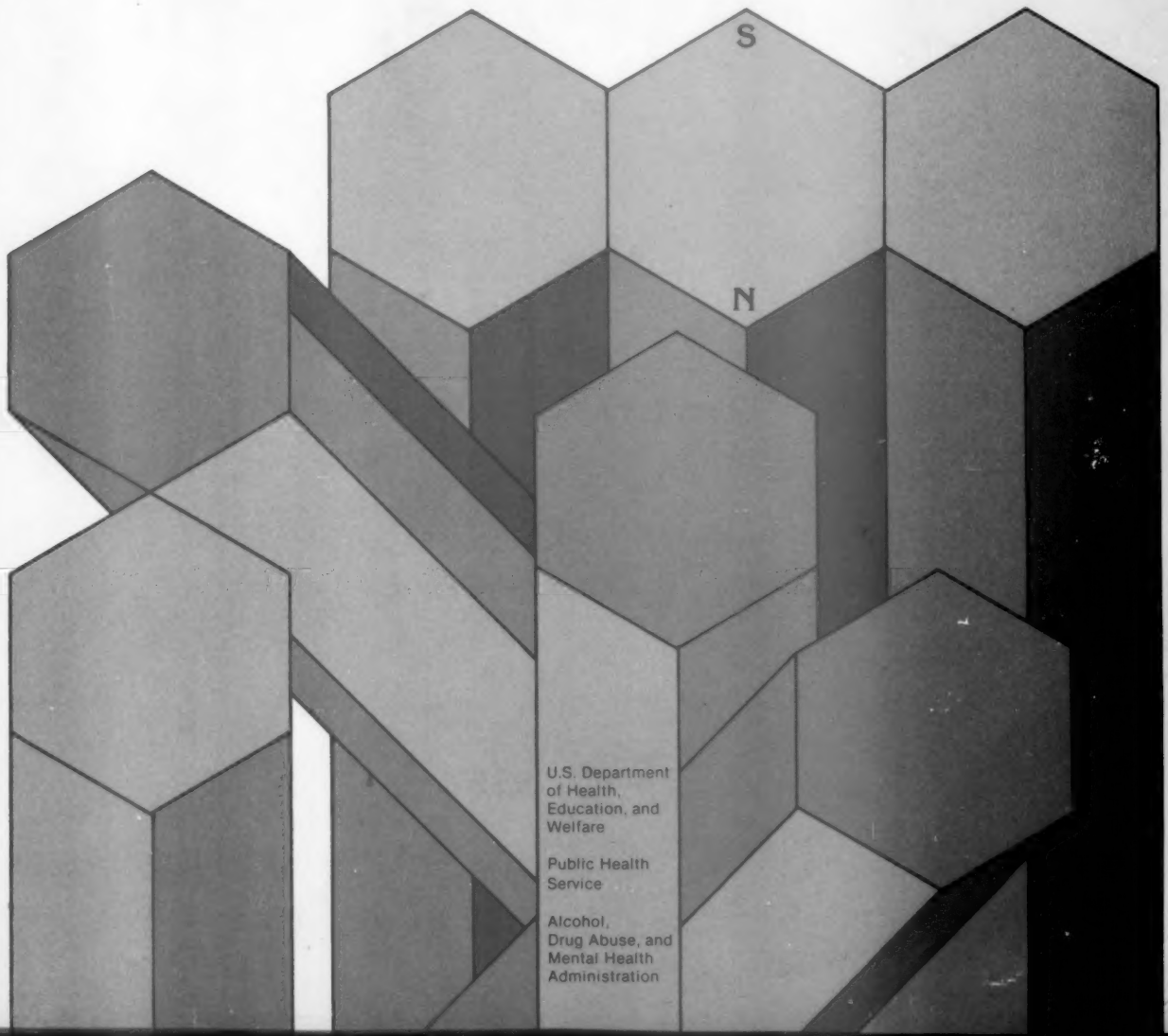

U.S. Department of Health, Education, and Welfare

Public Health Service

Alcohol, Drug Abuse, and Mental Health Administration

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Carrie Lee Rothgeb, *Editor*
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ABSTRACTS

PRECLINICAL PSYCOPHARMACOLOGY

01 CHEMICAL SYNTHESIS, ISOLATION AND CHARACTERIZATION

000001 Coward, James K.; Motola, Nancy C.; Moyer, James D. Department of Pharmacology, Yale University School of Medicine, New Haven, CT 06510 **Polyamine biosynthesis in rat prostate. Substrate and inhibitor properties of 7-deaza analogues of decarboxylated S-adenosylmethionine and 5'-methylthioadenosine.** Journal of Medicinal Chemistry. 20(4):500-505, 1977.

The 7-deaza analogue of 5'-methylthioadenosine, a nucleoside end product in polyamine biosynthesis, was synthesized and shown to competitively inhibit the hydrolytic cleavage of the purine/ribose bond in methylthioadenosine. The 7-deaza analgue of decarboxylated S-adenosylmethionine, a cofactor in the biosynthesis of spermidine and spermine, was also synthesized. This analogue acted as a substrate in the reaction catalyzed by spermidine synthase, in which severe substrate inhibition by both the normal nucleoside substrate and the 7-deaza analogue is observed. Results are discussed in terms of possible end product regulation of polyamine biosynthesis and the possible substitution of the nucleoside antibiotic, tubercidin, for adenosine in reactions involved S-adenosylmethionine and its metabolites. 54 references. (Author abstract modified)

000002 Cross, Peter E.; Dickinson, Roger P.; Halliwell, Geoffrey; Kemp, John E. G. Pfizer Central Research, Pfizer Limited, Sandwich, Kent, England **Substituted trifluoromethyl phenyl piperazines as anorectic agents.** European Journal of Medicinal Chemistry (Paris). 12(2):173-176, 1977.

A series of trifluoromethyl phenyl piperazines possessing cycloimido alkyl side-chains is reported. Several compounds were found to have good anorectic activity in rats associated with minimal side-effects on the CNS. The most potent member of the series was 1-(2-succinimidoethyl)-4-chloro-3-trifluoro-methly-phenyl)piperazine. 14 references. (Author abstract)

000003 Cussac, Max; Boucherle, Andre; Hache, Joel. Groupe d'Etude et de Recherches du Medicament, U.E.R. des Sciences Pharmaceutiques, avenue de Verdun, F-38240 Meylan, France **/Cyclopropanic pyridine alcohols./** Alcools pyridiniques cyclopropaniques. European Journal of Medicinal Chemistry (Paris). 12(2):177-181, 1977.

The synthesis of several secondary alpha-cyclopropane pyridine alcohols and their pharmacological properties are described. The compounds are CNS depressants with anticonvulsant and minor anxiolytic effects. Their activity is not as pronounced as that of the corresponding alpha,beta-unsaturated pyridine alcohols. It is concluded that the introduction of a cyclopropane instead of a double bond does not favor thymoleptic activity. 13 references. (Author abstract modified)

000004 Elsohly, Mahmoud A.; El-Feraly, Farouk S.; Turner, Carlton E. Research Institute of Pharmaceutical Sciences and Dept. of Pharmacognosy, School of Pharmacy, Univ. of Mississippi, University, MS 38677 **Isolation and characterization of (+)-cannabitriol and (-)-10-ethoxy-9-hydroxy delta6a(10a)-tetrahydrocannabinol: two new Cannabinoids from Cannabis sativa L. extract.** Lloydia. 40(3):275-280, 1977.

The investigation of the alcoholic extract of a Cannabis sample is reported. The investigation results reported include the isolation of (+) cannabitriol (9,10-dihydroxy-delta6a(10a)THC) (2) and (-)-10-ethoxy-9-hydroxy-delta6a(10a)THC (1). The structures of both compounds were determined by spectral means as well as by correlation with cannabinol (3). It is suggested that the formation of the above compounds can now be explained in terms of a nucleophilic attack on the epoxide ring by ethanol and water. 7 references. (Author abstract modified)

000005 Flammang, Michel; Wermuth, Camille-Georges. Laboratoire de Chimie Organique, Faculte de Pharmacie, Universite Louis Pasteur, 3, rue de l'Argonne, F-67083 Strasbourg Cedex, France **/Synthesis and pharmacologic study of 1-oxo 2,5-dihydro (1H)2,3-benzodiazepines./** Systemes benzodiazepiniques-2,3. III. Oxo-1 dihydro-2,5(1H) benzodiazepines-2,3: synthese et etude pharmacologique. European Journal of Medicinal Chemistry (Paris). 12(2):121-124, 1977.

Twelve 1-oxo 2,5-dihydro(1H) 2,3-benzodiazepines were prepared by condensation of alpha-aroyltoluic acids with hydrazines. They were tested pharmacologically in mice where they elicited weak sedative, anxiolytic and analgesic activities. 14 references. (Author abstract)

000006 Gilliom, Richard D.; Bosin, Talmage R.; Chiu, P.; Purcell, William P. Department of Chemistry, Southwestern at Memphis, Memphis, TN 38112 **Quantitative structure-activity relationships of biologically active indole, 1-methylindole and benzo(b)thiophene derivatives.** European Journal of Medicinal Chemistry (Paris). 12(2):183-186, 1977.

Electronic effects calculated by molecular orbital methods, partition coefficients, pKa values, and steric parameters were examined in the light of physiological responses and quantitative structure/activity relationships were developed for a series of biologically active indole, 1-methylindole, and benzo(b)thiophene derivatives. Both pLD50 and pD2 (rat stomach fundus affinity) were found to fit the same model for this series of isoesters. The data suggest that replacement of the indole nucleus by 1-methylindole or benzo(b)thiophene does not markedly alter biological activity measured by LD50 or pD2 parameters. 16 references. (Author abstract modified)

000007 Hatfield, G. M.; Valdes, L. J. J.; Keller, W. J.; Merrill, W. L.; Jones, V. H. College of Pharmacy, University of Michigan, Ann Arbor, MI 48109 **An investigation of Sophora secundiflora seeds (mescalbeans).** Lloydia. 40(4):374-383, 1977.

A study of the hallucinogenic activity of Sophora secundiflora seeds (mescalbeans) is presented, with review of ethnobotanical reports regarding the native American use of the seeds. Chemical analysis of mescalbeans revealed the absence of detectable amounts of tryptamine derivatives; however, two additional quinolizidine alkaloids, epi-lupinine and delta5-dehydrolupanine, were isolated. Thus far, seven quinolizidine alkaloids have been detected in mescalbeans and quantitation of these constituents showed that the major alkaloid present is cytisine (0.25%). The toxicity of mescalbeans in mice (oral LD50 1.4g/kg) is only partially attributable to the known alkaloid content. Results indicate that no unequivocal evidence was found to support the proposal that mescalbeans are hallucinogenic. 51 references. (Journal abstract modified)

000008 Liang, Y.-O; Plotsky, P. M.; Adams, R. N. Department of Chemistry, University of Kansas, Lawrence, KS 66045 **Isolation and identification of an in vivo reaction product of 6-hydroxydopamine.** Journal of Medicinal Chemistry. 20(4):581-583, 1977.

The product of oxidized 6-hydroxydopamine (6-OHDA) and glutathione (GSH) reacted in vitro at pH 7.4was identified via chemical and physical methods as being 2,3,5-trihydroxy-6-S-(glutathionyl)phenethylamine. Its chemical properties show that it easily undergoes a variety of oxidative condensations and polymerization. The oxidized form, p-quinone, can be identified in small quantities in rat and mouse brain 1 to 3 hours after 6-OHDA injection. The in vivo interaction of 6-OHDA with CNS tissue was demonstrated for the first time. 12 references. (Author abstract modified)

000009 Mattsson, Hillevi; Brandt, Karin; Heilbronn, Edith. Unit of Biochemistry, National Defence Research Institute, Dept. 4, S-172 04 Sundbyerg 4, Sweden **Bicyclic phosphorus esters increase the cyclic GMP level in rat cerebellum.** Nature (London). 268(5615):52-53, 1977.

The effects of bicyclic phosphorus esters on the cyclic nucleotides AMP and GMP were investigated. Wister rat cerebellums were injected intraperitoneally with 1-phospha-2,6,7-trioxabicyclo(2.2.2)octane-1-oxide PTBO compounds, and tissue pieces from the cortex, subcortical tissues and cerebellum were assayed using testing kits to determine the effect on cyclic AMP and cyclic GMP. Convulsive doses of ethyl-EPTBO caused no significant difference of levels of AMP in any of the brain areas studied, but cyclic GMP level was increased almost fivefold. A subconvulsive dose of isopropyl-IPTBO increased the level of cyclic GMP almost twofold. Diazepam given 10 min before the administration of the PTBO derivatives blocked the increase of cyclic GMP induced by the subconvulsive dose of isopropyl-IPTBO and reduced the increase by the convulsive dose of ethyl-EPTBO from fivefold to less than twofold. It is suggested that a cyclic GMP increase induced by the PTBO derivatives may be an expression of increased release of excitatory transmitters from neurons synapsing on the Purkinje cells.

000010 Middlemiss, Derek N.; Blakeborough, Louise; Leather, Stephen R. Biochemistry Dept., Imperial Chemical Industries, Pharmaceutical Div., Mereside, Alderley Pk, Macclesfield, Cheshire, England **Direct evidence for an interaction of beta-adrenergic blockers with the 5-HT receptor.** Nature (London). No.5608:289-290, 1977.

A stereospecific interaction of propranolol and other beta-blockers with the 5-HT receptor, an action which was apparently previously unknown for this class of drug, is demonstrated in rat brain tissue. It is suggested that the affinity of beta-blockers for the 5-HT receptor does not necessarily parallel their beta-blocking potency in tissues outside the central nervous system since pindolol, a potent beta-blocker, is less potent in displacing H-5-HT than propranolol. The direct interaction of propranolol with 5-HT receptor which is reported is said to be in accord with the suggestion of Green and Grahame-Smith that, on the basis of the blocking action of propranolol on a L-tryptophan induced hyperactivity in rats, the drug inhibits central 5-HT function. It is concluded that the significance of the observations in relation to the effects of propranolol in the central nervous system of man and animals remains to be evaluated. 18 references.

000011 Miocque, Marcel; Vierfond, Jean-Michel; Lehuede, Jacques; Raynaud, Guy; Thomas, Janine. Centre d'Etudes Pharmaceutiques, rue J-B Clement, F-92290 Chatenay-Malabry, France **/Imipramine derivatives: aminomethylation of diphenylamine and iminodibenzyle./** Derives de l'imipramine: aminomethylation de la diphenylamine et de l'iminodibenzyle. European Journal of Medicinal Chemistry (Paris). 12(3):219-225, 1977.

An investigation of the structure/activity relationships of tricyclic antidepressants which was performed by aminomethylation of two imipramine derivatives, diphenylamine and iminodibenzyle, is reported. Two derivatives of imipramine, diphenylamine and iminodibenzyle, were converted to their para-aminomethyl derivatives. Pharmacological screening of the main derivatives indicated a partial or total loss of the antireserpine activity displayed by imipramine and a retention of its antispasmodic properties. 18 references. (Author abstract m6dified)

000012 Moroni, F.; Cheney, D.L.; Costa, E. Laboratory of Preclinical Pharmacology, NIMH, St. Elizabeth Hospital, Washington, DC 20032 **Beta endorphin inhibits ACh turnover in nuclei of rat brain.** Nature (London). No.5608:267-268, 1977.

The action of alpha and beta endorphin on acetylcholine (ACh) turnover rate (TR ACh) in the selected rat brain nuclei was investigated. It was found that analgesic doses of beta endorphin injected intraventricularly decreased TR ACh in cortex, hippocampus, nucleus accumbens and globus pallidus but not in nucleus caudatus. This decrease of TR ACh was antagonized by naltrexone. Alpha endorphin failed to cause analgesia or to decrease TR ACh in all brain nuclei studied. It is suggested that the data implies that if endogenous beta endorphin were to be released from presynaptic terminals in the vicinity of opiate receptors located in the membrane of cholinergic neurones, it would decrease the metabolic rate of ACh and presumably decrease the rate of firing of these neurones. 11 references.

000013 Ogata, Masaru; Matsumoto, Hiroshi; Hirose, Katsumi. Shionogi Research Laboratory, Shionogi & Co., Ltd., Fukushima-ku, Osaka 553, Japan **5-Aryl-1,5-dihydro 2H-1,4-benzodiazepin-2-one derivatives as antianxiety agents.** Journal of Medicinal Chemistry. 20(6):776-781, 1977.

A new series of 7-chloro and 7-nitro-5-methoxy-5-phenyl-1,5-dihydro-2H-1,4-benzodiazepin-2-ones was synthezied which may have potent actions on the central nervous system. The chemicals were tested for motor relaxant activity in mice by a rotarod test; for tranquilizing activity, antagonism of pentylenetetrazole induced convulsions in mice was measured by the maximal electroshock test. All the 5-methoxy-1,5-dihydro-1,4-benzodiazepines were found to have potent antipentylenetetrazole activity. These compounds were also employed as intermediates in the synthesis of 3-substituted 1, 3-dihydro-1,4-benzodiazepin-2-ones. 15 references. (Journal abstract modified)

000014 Poduslo, S. E.; MacFarland, H. F.; McKhann, G. M. Johns Hopkins University School of Medicine, Department of Neurology, Baltimore, MD 21205 **Antiserums to neurons and to oligodendroglia from mammalian brain.** Science. 197(4300):270-272, 1977.

Two specific antiserums, one to rat neurons and one to lamb oligodendroglia, isolated in bulk from normal brain, were produced. On the basis of immunofluorescence and absorption studies with bulk isolated cells, the antiserums were produced to specific surface components. It is suggested that the antiserums may be used to aid in the identification of cell types

in vitro, to identify and study differences between abnormal and normal cells in vitro, to study any changes that may occur in cell surface components during development, and, potentially, to sort specific cell types by means of a fluorescent activated cell sorter, a technique now used with lymphocytes. 15 references. (Author abstract modified)

000015 Walker, Mary Clare; Simon, Eric J. Dept. of Pathology, New York, Univ., Medical Center, 550 First Ave., New York, NY 10016 **The purification of antimorphine antibodies by affinity chromatography.** Journal of Pharmacology and Experimental Therapeutics. 203(2):360-364, 1977.

The use of affinity chromatography to purify antimorphine antibodies produced in rabbits is reported. Morphine succinylated at position 6 was attached to bovine serum albumin to make it immunogenic and to Sepharose beads for affinity chromatography. A crude gamma globulin fraction of antimorphine serum, prepared by salt fractionation, was used for purification. After unbound gamma globulin was washed off the column with phosphate buffered saline, two populations of antimorphine antibodies were eluted in succession by two low pH buffers. Each of these two purified antibody fractions had an index of heterogeneity of approximately 1. Immunoelectrophoresis indicated that the antibodies were immunoglobulin-G and that they formed a single precipitation band with antirabbit serum. A 67 fold purification of the antimorphine antibodies could be achieved by a single pass through an affinity column. 13 references. (Author abstract modified)

02 DRUG DEVELOPMENT (PRECLINICAL SCREENING)

000016 Bianchi, M.; Butti, A.; Rossi, S.; Barzaghi, F.; Marcaria, V. Roussel Maestretti S. p. A., Reparto Ricerche, Viale Gran Sasso 18, Milano, Italy **A new synthesis of 5-keto-1H-4,5-dihydro 1,2,4-benzotriazepines and a preliminary study of their biological properties.** European Journal of Medicinal Chemistry (Paris). 12(3):263-269, 1977.

A new synthesis for the preparation of 5-keto-1H-4,5-dihydro-1,2,4-benzotriazepines is described. The pharmacological properties of several compounds in the series were investigated in rats and mice. Several of the compounds produced behavioral changes. The main effects included ataxia, decrease of motor activity, muscle relaxation, and hypothermia. 18 references.

000017 Claassen, V.; Davies, J. E.; Hertting, G.; Placheta, P. Department of Pharmacology, Philips-Duphar B.V., Weesp, The Netherlands **Fluvoxamine, a specific 5-hydroxytryptamine uptake inhibitor.** British Journal of Pharmacology (London). 60(4):505-516, 1977.

To determine the potential of (E)-5-methoxy-4'-(trifluoromethyl)valerophenone 0-(2-aminoethyl)oxime maleate (Fluvoxamine) for antidepressant use, a series of biochemical and pharmacological in vivo and in vitro animal studies were undertaken. Fluvoxamine was characterized as a potential antidepressant drug with almost exclusively 5-hydroxytryptamine (5-HT) uptake inhibiting properties. Fluvoxamine is effective in inhibiting 5-HT uptake by blood platelets and brain synaptosomes. Due to inhibition of the membrane pump the compound prevents 5-HT depletion by the tyramine derivatives H 75/12 and H 77/77. As a result of the interference with the neuronal reuptake mechanism for 5-HT, fluvoxamine produces a decreased 5-HT turnover in the brain. Effects of 5-hydroxytryptophan (5-HTP) are potentiated in mice and in combination with pargyline, fluvoxamine induces 5-HT like behavioral effects. In contrast to tricyclic antidepressants, noradrenaline uptake processes are either unaffected or only slightly inhibited by fluvoxamine. The noradrenaline depleting effects of tyramine derivatives are not influenced by fluvoxamine. Reserpine effects, such as ptosis are affected only at very high doses of the test compound. The antagonism by fluvoxamine of the reserpine induced lowering of the pentamethylenetetrazole convulsive threshold can be regarded as due to an effect upon 5-HT uptake. In contrast to the effects of desmethylimipramine and imipramine, no stimulatory effects are found in rats when rapidly acting reserpine like compounds are given following a dose of fluvoxamine. 23 references. (Author abstract modified)

000018 Cowan, A.; Lewis, J. W.; MacFarlane, I. R. Department of Pharmacology, Temple University School of Medicine, Philadelphia, PA 19140 **Agonist and antagonist properties of buprenorphine, a new antinociceptive agent.** British Journal of Pharmacology (London). 60(4):537-545, 1977.

To determine the potential of N-cyclopropylmethyl-7alpha-(1-S-hydroxy,1,2,2-trimethylpropyl)-6,14,-e doethano-6,7,8,14-tetrahydronororipavine (buprenorphine) as a narcotic antagonist analgesic, a series of biochemical, pharmacological, and behavioral studies were undertaken in vivo and in vitro in rats. Buprenorphine is a highly lipophilic derivative of oripavine. In rodent antinociceptive assays (writhing, tail pressure), buprenorphine had an action which was rapid in onset and of long duration; it was 25 to 40 times more potent than morphine after parenteral injection and 7 to 10 times more potent after oral administration. The log dose response relationship for buprenorphine was curvilinear in mouse and rat tail flick tests with the antinociceptive effect decreasing at higher, nontoxic doses. Tolerance developed to the antinociceptive activity of buprenorphine in mice. No signs of abstinence were observed on naloxone challenge or after abrupt withdrawal in monkeys receiving buprenorphine chronically for one month. Buprenorphine antagonized the antinociceptive actions of morphine in mouse and rat tail flick tests but was an ineffective antagonist in the rat tail pressure test. Buprenorphine precipitated signs of abstinence in morphine dependent mice and monkeys but not in morphine dependent rats. Buprenorphine produced Straub tails in mice. This effect was not antagonized when the animals were pretreated with naloxone. However, in the rat tail pressure test high doses of diprenorphine antagonized established antinociceptive effects of buprenorphine. It is concluded that buprenorphine represents a definite advance in the search for a narcotic antagonist analgesic of low physical dependence potential. 22 references. (Author abstract modified)

000019 Cusan, Lionel; Dupont, Andre; Kledzik, Gary S.; Labrie, Fernand; Coy, David H.; Schally, Andrew V. Medical Research Council Group in Molecular Endocrinology, Le Centre Hospitalier de l'Universite Laval, Quebec G1V 4G2, Canada **Potent prolactin and growth hormone releasing activity of more analogues of Met-enkephalin.** Nature (London). No. 5620:544-547, 1977.

To explore the possibility that brain peptides, methionine-enkephalin and leucine-enkephalin, could be involved in the control of neuroendocrine functions, intraventricular injections of Met-enkephalin analogues were administered to rats. Data collected indicated that these analogues stimulate growth hormone and prolactin release. The model described is presented as useful for the precise assessment of the biological activity of endogenous and synthetic opiate substances. 20 references.

000020 Glock, Dana; Gauron, Eugene F.; Rowley, Vinton N. Department of Psychiatry, University of Iowa, 500 Newton Road, Iowa City, IA 52242 **Effects of methlyphenidate on avoidance learning in the aged rat.** Journal of General Psychology. 96(Second Half):263-266, 1977.

To determine the effects of methylphenidate on avoidance learning in the aged rat, 20 Sprague Dawley rats, aged 22 to 26 months were given subcutaneous injections of 4.5mg/kg methylphenidate or distilled water. Twelve minutes after the single injection was given, rats began 90 trials of avoidance conditioning. Drug animals made significantly more correct responses than did the control animals. Results indicate that use of methylphenidate in aged rats improved avoidance learning which corroborates previous studies in which mature animals given methylphenidate made more correct responses than control Ss on avoidance conditioning. 14 references. (Author abstract modified)

000021 Gogerty, John H.; Griot, Rudolf G.; Habeck, Dietmar; Iorio, Louis C.; Houlihan, William J. Research and Development Division, Sandoz, Inc., East Hanover, NJ 07936 **Synthesis and central nervous system evaluation of some 5-alkoxy-3H-1,4-benzodiazepin-2(1H)-ones.** Journal of Medicinal Chemistry. 20(7):952-956, 1977.

A series of 1-R-5-alkoxy-3H-1,4-benzodiazepin-2(1H)-ones was prepared and evaluated for central nervous system depressant activity. Several of these compounds, in particular, 7-chloro-5-ethoxy-1-methyl-3H-1,4-benzodiazepin-2(1H)-one, gave a profile and activity level similar to diazepam when measured in mice. 11 references. (Author abstract)

000022 Goldman, Mark S. Wayne State University, Detroit, MI 48202 **Effect of chlordiazepoxide administered early in extinction on subsequent extinction of a conditioned emotional response in rats: implications for human clinical use.** Psychological Reports. 40(3, Part 1):783-786, 1977.

To determine whether the diminution of the conditioned emotional response that occurs in a subject while under the influence of chlordiazepoxide continues to be observable when the subject is no longer under the influence of the drug, two groups of albino rats, in which a conditioned emotional response to a tone had previously been established, were given two extinction trials. One group of 16 rats received chlordiazepoxide on the first extinction while another group of 16 received saline. No drug was administered to either group on the second extinction trial. A standard extinction decrement was shown by the saline animals. The chlordiazepoxide animals not only failed to extinguish but showed a slight increment that was interpreted as being due to a "dissociation" of learning effect. These results suggest caution in the use of chlordiazepoxide in human clinical situations when the fear stimuli are delineated and the hope is for anxiety reduction that continues after withdrawal of the drug. 8 references. (Author abstract modified)

000023 Grandison, L.; Guidotti, A. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Stimulation of food intake by muscimol and beta endorphin.** Neuropharmacology (Oxford). 16(7/8):533-536, 1977.

The hypothesis that gamma-aminobutyric acid inhibits the satiety function of the ventromedial nucleus and thus promotes eating was tested by infusion of muscimol, a potent gamma-aminobutyric acid analogue, into the ventromedial hypothalamus of rats. The action of muscimol was also compared with that of norepinephrine, neurotensin, somatostatin, and beta-endorphin. Eating behavior in treated rats was observed, with differentiation between satiated and nonsatiated rats and between eating and gnawing behaviors. Results showed that muscimol and beta-endorphin stimulated food intake in satiated rats when injected into the ventromedial hypothalamus, and a similar effect was elicited by norepinephrine. Eating induced by muscimol was inhibited by bicuculline, but not by naltrexone or phentolamine. In contrast, norepinephrine induced eating was terminated by both phentolamine and bicuculline, whereas beta-endorphine induced eating was blocked by both naltrexone and bicuculline. These observations implicate gamma-aminobutyric acid in the regulation of food intake and suggest that this putative neuro transmitter may be involved also in the increased food intake induced by norepinephrine or opiate receptor agonists. 8 references. (Author abstract modified)

000024 Honda, Fumio; Satoh, Yoshihiko; Shimomura, Kyoichi; Satoh, Hisashi; Noguchi, Hideyo; Uchida, Sei-ichi; Kato, Ryuichi. Research Laboratories, Fujisawa Pharmaceutical Co., Ltd., Yodogawa-ku, Osaka 532, Japan **Dopamine receptor blocking activity of the sulpiride in the central nervous system.** Japanese Journal of Pharmacology (Kyoto). 27(3):397-411, 1977.

Effects of sulpiride on the CNS were studied in catalepsy induction (1) and antagonism to gnawing behavior (2) induced by apomorphine and methamphetamine in normal rats, and in antagonism to rotational behavior (3) induced by apomorphine and methamphetamine in rats with substantia nigra unilaterally lesioned chronically by microinjection of 6-hydroxydopamine. Sulpiride was administered orally and intraventricularly, and the effects of sulpiride were compared to those of haloperidol and chlorpromazine administered through the same routes. In oral administration, sulpiride was almost inactive in (1), and was several hundreds to a thousand times less potent than haloperidol in (2) and (3), while chlorpromazine was 20 to 150 times stronger than sulpiride. In intraventricular administration, sulpiride was almost equipotent to haloperidol in (1), and was equally effective to or 2 to 3 times more effective than halopridol in (3), although several times less potent than haloperidol in (2), and chlorpromazine was least potent among the drugs in all respects. These findings suggest that sulpiride is essentially a potent inhibitory substance on dopamine receptors in the CNS and the rather weak central effects of peripherally given sulpiride are due to poor penetration through the blood/brain barrier. 48 references. (Author abstract)

000025 Isbell, Harris. National Institute on Drug Abuse, Addiction Research Center, PO Box 12390, Lexington, KY 40511 **The search for a nonaddicting analgesic: has it been worth it?** Clinical Pharmacology and Therapeutics. 22(4):377-384, 1977.

A brief history of the search for nonaddicting analgesics and the development or discovery of potential nonaddicting drugs suitable for analgesic or narcotic withdrawal purposes are reviewed. Following the establishment of the Committee on Drug Addiction and Narcotics in 1929, laboratories were established at the Universities of Virginia and Michigan, followed by a research unit in Kentucky. Methods for evaluating dependence potentials of new drugs were developed and new drugs were tested. A number of synthetic drugs such as meperidine and methadone were developed which proved useful in the treatment of addiction but which were themselves addicting. Perhaps the most important discovery to date has been that of a large number of morphine agonists/antagonists. Potential uses of opioid antagonists include: analgesia with

reduced addiction liability; treatment of opioid overdose; diagnosis of opioid type physical dependence; and possibly the prevention of relapse to opiate use in addicts. Nefopam, benzopyranopyridine, and the endorphines are currently undergoing clinical and preclinical testing. 57 references.

000026 Krogsgaard-Larsen, P.; Johnston, G. A. R.; Lodge, D.; Curtis, D. R. Department of Pharmacology, Australian National University, Canberra, Australia **A new class of GABA agonist.** Nature (London). 268(5615):53-55, 1977.

To describe a new class of GABA agonist, a study of the relative effects of isoguvacine and THIP on the extracellular action potentials of the lumbar dorsal horn intraneurons and the Renshaw cells of three cats was reported. The compounds tested were administered electrophoretically by micropipettes in adjusted aqueous solutions. The approximate potency of any depressant action was assessed relative to that of GABA on the basis of electrophoretic currents required to produce equal and submaximal inhibitions of firing induced by DLH. The depressant action of isoguvacine was two to four times more potent than that of THIP and GABA which were equipotent, and the depressant action was found to be reversibly antagonized by bicuculline methochloride. It is suggested that the action of these compounds as GABA agonists provides indirect evidence that GABA interacts with bicuculline sensitive postsynaptic receptors in the cat spinal cord in a partially extended and almost planar conformation.

000027 Lippmann, W.; Pugsley, T. A. Ayerst Research Laboratories, Box 6115, Montreal, Quebec H3C 3J1, Canada **Effects of 3,4-dihydro 1H-1,4-oxazino(4,3-a) indoles, potential antidepressants, on biogenic amine uptake mechanisms and related activities.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 227(2):324-342, 1977.

A novel series of 24 compounds, the 3,4-dihydro-1H-14-oxazino(4,3-a)indoles, were examined for their ability to inhibit the norepinephrine (NE) and serotonin (5-HT) neuronal membrane uptake mechanisms in mice and rats. Various related activities of the most potent member of this series (compound 8) were determined and compared to those of a structurally related compound 24, the tricyclic antidepressants desimipramine (DMI), imipramine (I) and amitriptyline (AT). Compound 8 was greater, or generally equivalent, in activity to compound 24, I and AT in blocking the NE uptake mechanisms, antagonizing reserpine induced effects and potentiating the behavioral effects of L-dopa. Compound 8, unlike compound 24, I and AT, was not appreciably effective as a 5-HT uptake inhibitor or central 5-HT potentiator. Both compounds 8 and 24 enhanced central dopaminergic activity as demonstrated by their ability to potentiate the apomorphine induced syndrome. These findings indicate that compound 8, like DMI, is a relatively selective blocker of neuronal NE uptake and compound 24, like I and AT, blocks both NE and 5-HT uptake mechanisms, actions considered to be of relevance with respect to potential clinical antidepressant activity. 45 references. (Author abstract modified)

000028 Maickel, R. P.; Zabik, J. E. Section on Pharmacology, Medical Sciences Program, Indiana University, Bloomington, IN 47401 **An animal screening test for drugs that predicts the likelihood of human physical dependence.** Clinical Pharmacology and Therapeutics. 21(1):109-110, 1977.

Report of a novel animal screening test for drugs likely to cause physical dependence in humans was presented at the 78th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, Dallas, 1977. Adult, male Sprague-Dawley rats were trained to consume their entire daily fluid intake in a single 60 min session, and the volume consumed was measured. The more than 70 test drugs examined were administered 15 min before the test session. One group of drugs (amphetamines, antidepressants, antihistamines, antipsychotics, narcotic antagonists, parasympathomimetics, parasympathetic blockers, and beta-adrenergic blockers) caused a dose dependent reduction in fluid intake beginning with the threshold value for the drug. The second group of drugs (agents known to induce human physical dependence, including antianxiety agents, barbiturates, narcotic agonists, and delta-9-tetrahydrocannabinol) caused a dose dependent increase in fluid intake up to a maximum, beyond which there was a dose dependent reduction in fluid intake.

000029 Malick, Jeffrey B.; Billingsley, Melvin L.; Kubena, Robert K.; Goldstein, Jeffrey M. Biomedical Research Dept., Stuart Pharmaceuticals, Division of ICI United States Inc., Wilmington, DE 19897 **Evaluation of naloxone in laboratory tests predictive of clinical antipsychotic activity.** Communications in Psychopharmacology. 1(5):475-488, 1977.

To investigate whether naloxone would exhibit any potential antipsychotic activity in animal laboratory tests that have routinely been employed to predict such activity in man, naloxone or a placebo was given intraperitoneally to mice after amphetamine administration. Results indicated that naloxone failed to exhibit a pharmacological profile similar to standard reference antipsychotics (haloperidol, clozapine) in laboratory tests, the only possible exception being the naloxone antagonism of apomorphine induced stereotyped chewing behavior in mice. Naloxone, however, failed to antagonize apomorphine induced rearing in mice even at 100mg/kg. It is concluded that on the basis of these results it is difficult to predict whether naloxone would exhibit antipsychotic activity in a significant segment of schizophrenic patients. It is suggested that if imbalances in endorphins are related to the development of schizophrenia, drastic alterations in current theories on psychosis and in laboratory tests designed to detect antipsychotic activity are requried. 28 references. (Author abstract modified)

000030 Okafor, Charles O.; Steenberg, Marie L.; Buckley, Joseph P. Department of Chemistry, University of Nigeria, Nsukka, Nigeria **Studies in the heterocyclic series. XIII. New CNS-depressants derived from 1,9-diazaphenoxazine and two isomeric triazaphenothiazine ring systems.** European Journal of Medicinal Chemistry (Paris). 12(3):249-256, 1977.

The synthesis of a new series of 1,3,6-triazaphenothiazines and 1,3,9-triazaphenothiazines is described. All of the compounds whose biological properties were tested showed appreciable central nervous system depressant activities comparable with the activity of chlorpromazine when tested in mice and rats. The activities of 4-amino-8-methyl-1,3,9-triazaphenothiazine and 2,4-dichloro-7-methoxy-1,3,6-triazaphenothiazine were most promising. The structurally related 1,9-diazaphenoxazine was also active. All of these compounds decreased motor activity and rate of respiration within 30 min and also decreased body temperature. Some of the compounds also increased hexobarbital sleeping time. Conclusions based on a study of the structure/activity relationships are presented. 43 references. (Author abstract modified)

000031 Rahtz, Dieter; Paschelke, Gert; Schroder, Eberhard. Forschungslaboratorien der Schering AG Berlin/Bergkamen, Mullerstrasse 170-178, D-1000 Berlin 65, Germany **/New N-2-hydroxyalkyl-6,7-benzomorphan derivatives: synthesis and**

preliminary pharmacology./ Neue N-2-Hydroxyalkyl-6,7-benzomorphanderivate: Synthese und orientierende pharmakologische Prufung. European Journal of Medicinal Chemistry (Paris). 12(3):271-278, 1977.

The synthesis of 6,7-benzomorphan derivatives with straight chained or branched chained residues at the nitrogen atom is described. The results of screening tests carried out in mice of the analgesic, morphine antagonistic, anticonvulsive, and behavioral effects of the compounds are presented. Structure/activity relationships and biological activity in comparison to known analogues are discussed. 46 references. (Author abstract modified)

000032 Sakurada, Tsukasa; Kisara, Kensuke. Department of Chemical Pharmacology, Tohoku College of Pharmacy, Komatsushima, Sendai 983, Japan **Effects of p-chlorophenylalanine (p-CPA) on sleep in olfactory bulb lesioned rats.** Japanese Journal of Pharmacology (Kyoto). 27(3):389-395, 1977.

The influence of p-chlorophenylalanine (p-CPA) and 5-hydroxytryptophan (5-HTP) followed by p-CPA on the sleep/wakefulness cycle was studied in rats with olfactory bulb lesions (O.B. lesioned). In these rats, electrodes were chronically implanted to record the EEG (frontal cortex and dorsal hippocampus), the cervical electromyogram and eye movements. The REM sleep stage was selectively decreased from 24 to 32 hours after 200mg/kg of p-CPA in the sham lesioned rats, whereas both the slow wave (SW), sleep and REM sleep stages were markedly decreased by the same dose of p-CPA in the O.B. lesioned rats. In both sham and O.B. lesioned groups, SW sleep and REM sleep stages decreased from 24 to 32 hours after 400mg/kg of p-CPA and the percentage of decrease in SW sleep stage was much larger with 400mg/kg of p-CPA than with 200mg/kg of p-CPA. However, the REM sleep stage disappeared from 24 to 32 hours after 200mg/kg and 400mg/kg of p-CPA. In the O.B. lesioned rats, the insomnia produced by 200mg/kg and 400mg/kg of p-CPA disappeared with 5-HTP (5mg/kg). On the other hand, the insomnia produced by 200mg/kg of p-CPA did not recur with 5-HTP in the sham lesioned rats, but with 400mg/kg there was a recurrence. These results suggest that the enhanced effect of p-CPA and 5-HTP followed by p-CPA in the O.B. lesioned rats is due to changes in the sensitivity of the serotonergic system in the brain. 22 references. (Author abstract modified)

000033 Sakurada, Tsukasa; Kohno, Hiroyuki; Tadano, Takeshi; Kisara, Kensuke. Department of Chemical Pharmacology, Tohoku College of Pharmacy, Komatsushima, Sendai 983, Japan **Pharmacological actions of intracerebrally administered polyamines in mice.** Japanese Journal of Pharmacology (Kyoto). 27(3):453-460, 1977.

Pharmacological actions of sperimidine (SPD) and spermine (SPM) in mice given these polyamines by intracerebral injection (i.c.)were investigated. The spontaneous motor activity (SMA) assessed by the photocell counter method did not change immediately following injection of 80 microgm SPD, but was enhanced 24 hours after the injection of 40 or 80 microgm. A significant decrease of SMA was not immediately evident after the administration of 40 microgm SPM but was demonstrated 24 hours later. Mice given single doses of 20 microgm SPD exhibited increase in weight gain and those given 40 microgm showed no significant difference, whereas a conspicuous decrease in weight occurred in mice given 80 microgm of SPD. The body weights of mice given single doses of 10 micrgm SPM remained much the same, while significant weight losses occurred in the the SPM 20 microgm and 40 microgm dosed groups. There was a significant prolongation of pentobarbital induced sleep 6 days after the injection of high doses of SPD or SPM. Similar prolongation of sleeping time was also evident 30 minutes after the injection of SPM. The results indicate that the polyamines injected i.c. produce essentially the same effects as those observed after the polyamines are injected by a peripheral route and that SPD and SPM are substances which exert sustained inhibitory actions on the CNS. 14 references. (Author abstract modified)

000034 Tamaki, Yoshitaka. Faculty of Education, Shinsyu University, Nishinagano, Nagano 380, Japan **Failure of peripheral dopamine beta-hydroxylase inhibitor to affect discriminated Sidman avoidance learning in rats under long-term training.** Psychological Reports. 40(3, Part 1):936-938, 1977.

The effects of 5-dimethyldithiocarbamylpicolinic acid (YP-279), a selective inhibitor of peripheral dopamine beta-hydroxylase, on operant behavior after long-term training sessions was investigated in four rats. After 72 training days in a discriminated Sidman avoidance situation, rats were administered three dosages (25, 50, and 75mg/kg) of YP-279. YP-279 treatment produced no observable change in avoidance responses. The results indicate that well learned coping behavior was not influenced by the inhibition of peripheral dopamine beta-hydroxylase. 6 references. (Author abstract modified)

000035 Witiak, Donald T.; Vishnuvajjala, Babu R.; Cook, Wayne L.; Minatelli, John A.; Gupta, Tribhuwan K.; Gerald, Michael C. Divisions of Medicinal Chemistry and Pharmacology, College of Pharmacy, Ohio State University, Columbus, OH 43210 **3,4-Methylenedioxyphenyl-, isopropylidenedioxyphenyl-, and benzyl-substituted chiral 2-aminosuccinimides and 3-aminopyrrolidines. Stereoselective investigations of potential anti-Parkinsonian, antipsychotic and anticonvulsant activities.** Journal of Medicinal Chemistry. 20(6):801-805, 1977.

The chiral title compounds 2-11 were assessed for their potential antiparkinsonian, antipsychotic, and anticonvulsant properties. The most striking differences in the biological activity of enantiomeric pairs were noted for D-(R)-2-amino-N-(3,4-methylenedioxyphenyl)succinimide hydrochloride (2) vs. L-(S)-3 and D-(R)-2-amino-N-(3,4-isopropylidenedioxyphenyl) succinimide (4) vs. L-(S)-5. D-(R)-2 partially attenuated amphetamine induced tremors. Their respective enantiomorphs were inactive in these tests. No differences in anticonvulsant potency of enantiomeric pairs were observed. The stereoselective actions of D-(R)-2 and 4 were rationalized on the basis of the presence or absence of gem-dimethyl functions in isopropylidenedioxy vs. methylenedioxy groups. The data seem to indicate that these methyl groups influence selective receptor site interaction in the D-(R) series. 28 references. (Journal abstract)

000036 Zuger, P. E.; Burki, H. R.; Loew, D. M. Medizinisch-Biologische Forschung, SANDOZ AG, CH-4002 Basel, Switzerland **Central tryptaminergic effects of 26-059. A novel serotonin derivative.** Experientia (Basel). 33(6):811, 1977.

In a paper presented at the 9th annual meeting of the Union of Swiss Societies of Experimental Biology in Zurich, April 1977, compound 26-059 (N,N'-bis(2-(5-hydroxy-3-indolyl)ethyl)hexamethylenediaminedihydrochlo ride) was compared with the physiological precursor of serotonin (5-HT). In the cat pretreated with reserpine, 26-059 reduced the number of PGO waves similar to 5-HTP d,l-5-hydroxytryptophan (5-HTP). 5-HT was inactive in doses up to 30mg/kg(-1). In mice and rats, 26-059 enhanced locomotor activity and excitability. It also altered the sleep/wakefulness cycle in rats. Neu-

rochemical data on rat brain 5-HT content and turnover support the hypothesis that 26-059 passes the blood-brain barrier and acts as a central tryptaminergic stimulant.

03 MECHANISM OF ACTION: PHYSIOLOGICAL, BIOCHEMICAL AND PHARMACOLOGICAL

000037 Aaes-Jorgensen, T.; Jorgensen, A. Biochemical Dept., H. Lundbeck & Co. A/S, Ottiliavej 7-9, DK-2500 Kopenhaven-Valby, Denmark **Studies of excretion in rabbit milk after administration of carbon-14 labelled amitriptyline and nortriptyline.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 227(2):294-301, 1977.

The excretion in rabbit milk after subcutaneous administration of carbon-14 labelled amitriptyline and nortriptyline, and the amounts of drug material in suckling neonates from nursing rabbits dosed repeatedly with the two drugs were measured. It was found that the concentrations of radioactivity in milk were of the same order as the concentrations in serum. The concentrations of radioactivity in the organs of neonates, which had received milk from rabbits dosed for 5 days with either amitriptyline or nortriptyline were considerably below those found in the corresponding organs of the dam. Amitriptyline administration to the dams seems to lead to higher concentrations in the organs of the offspring than does nortriptyline administration. 9 references. (Author abstract)

000038 Agarwal, R. A.; Lapierre, Y. D.; Rastogi, R. B.; Singhal, R. L. Dept. of Pharmacology, Faculty of Medicine, University of Ottawa, Ottawa, Ontario K1N 9A9, Canada **Alterations in brain 5-hydroxytryptamine metabolism during the 'withdrawal' phase after chronic treatment with diazepam and bromazepam.** British Journal of Pharmacology (London). 60(1):3-9, 1977.

The effects of chronic treatment with and withdrawal from diazepam and bromazepam on the metabolism of 5-hydroxytryptamine (serotonin, 5-HT) in rat brain are reported. Daily administration of diazepam and bromazepam for 22 days increased the activity of midbrain tryptophan hydroxylase (TPH) by 36% and 39%, respectively; both drugs also increased tryptophan in the midbrain and of 5-HT and 5-hydroxyindoleacetic acid (5-HIAA) in cerebral cortex, hypothalamus, pons/medulla, midbrain, and striatum. Diazepam decreased midbrain monoamine oxidase activity, but bromazepam had no effect on this enzyme, suggesting that the elevation of 5-HIAA is not associated with enhanced deamination of 5-HT. Discontinuation of treatment for 48 hours decreased the activity of midbrain TPH to levels significantly below those measured in control or treated rats. It also reduced the levels of midbrain tryptophan and the concentrations of 5-HT in the various brain regions studied. It is posited that the CNS depressant effects of these benzodiazepines are associated with increased brain metabolism of 5-HT, while withdrawal from therapy reduces 5-HT synthesis. 43 references. (Author abstract modified)

000039 Aghajanian, G. K.; Cedarbaum, J. M.; Wang, R. Y. Yale University School of Medicine, New Haven, CT 06508 **Evidence for norepinephrine-mediated collateral inhibition of locus coeruleus neurons.** Brain Research (Amsterdam). 136(3):570-577, 1977.

Evidence is presented for norepinephrine (NE) mediated collateral inhibition of locus coeruleus (LC) neurons in the rat, based on research to determine if the suppression depends on antidromic invasion of NE fibers which can be reversed by the alpha-adrenergic blocker piperoxane (PIP), an antagonist of NE in the LC. Electrophysiological and histofluorescent findings provided indirect support for the hypothesis that suppression of LC cell activity induced by stimulation of the dorsal bundle or cingulum is mediated via a direct NE collateral inhibitory system. Collateral inhibition may account for certain physiological properties of LC neurons, such as the gating of orthodromic activations. Interactions with collateral inhibitory mechanisms may also partly explain the effects of drugs which modify NE transmission (amphetamine, desipramine, and PIP) on LC activity. 36 references.

000040 Alder, K. B.; Fand, I. Creedmoor Institute for Psychobiologic Studies, Queens Village, NY 11427 **Cilioinhibitory effect of phenothiazines in vitro and its antagonism by CA++.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 227(2):309-323, 1977.

The inhibition of ciliary beating in vitro by physiologic concentrations of chlorpromazine (CPZ) and prochlorperazine (PCP) was investigated in two experimental systems. CPZ had a greater cilioinhibitory effect than PCP on the rotational velocity of tissue explants from the frog palate in amphibian Ringers solution, and on the frequency of ciliary beating in rat tracheal rings in culture medium. Addition of calcium acetate in equal molarity to CPZ, with a time limit dependent on the drug concentration, reversed this inhibition, while dibutyryl cyclic AMP did not. Simultaneous addition of Ca++ and CPZ slowed down, but did not stop, this ciliostasis, while priming with Ca++ or cyclic AMP prior to drug addition had less of an effect. These data lend support to a prevalent theory that CPZ exerts its actions by displacing calcium ions from membrane sites. 40 references. (Author abstract)

000041 Alfredsson, Gunnel; Wiesel, Frits-Axel; Skett, Paul. Laboratory of Experimental Psychiatry, Dept. of Psychiatry, Karolinska Institutet, S-10401 Stockholm, Sweden **Levels of chlorpromazine and its active matabolites in rat brain and the relationship to central monoamine metabolism and prolactin secretion.** Psychopharmacology (Berlin). 53(1):13-18, 1977.

To determine the relationship between chlorpromazine (CPZ) and its metabolites in the brain and central monoamine metabolism and prolactin secretion, CPZ, demethylated (nor1)-CPZ, 7-hydrocy(7-OH)-CPZ, and CPZ-nitrogenoxide-(NO) were administered to rats. Levels of homovanillic acid (HVA), 5-hydroxyindoleacetic acid (5-HIAA), and 3-methoxy-4-hydroxyphenylglycol (MOPEG) in the brain and prolactin in serum were determined. The HVA increase calculated per nmole unchanged drug in brain was about the same in the CPZ and 7-OH-CPZ groups, but nor1-CPZ was less than 50% as effective in this respect. When CPZ-NO was administered, high amounts of CPZ and nor1-CPZ were formed. The HVA levels were significantly correlated to the amount of the respective drug in the brain. After CPZ and 7-OH-CPZ the levels of unchanged drug in serum were about 3% of the brain level, while the drug serum/brain ratio was significantly lower in the nor1-CPZ treated group. The prolactin level in serum was raised to about 200% of control 90 min after all drugs were administered. This may be explained by assuming a supramaximal stimulation of the prolactin release mechanism already being achieved at low drug levels in the brain. 21 references. (Author abstract modified)

000042 Anden, N.-E.; Wachtel, H. Department of Pharmacology, University of Goteborg, Fack, S-40033 Goteborg, Sweden **Increase in the turnover of brain dopamine by stimulation of muscarinic receptors outside the dopamine nerve terminals.** Journal of Pharmacy and Pharmacology (London). 29(7):435-437, 1977.

The mechanism by which centrally acting acetylcholine like drugs increase the turnover of brain dopamine (DA) was investigated by determining the effects of various combinations of oxotremorine, physostigmine, methylatropine, atropine, apomorphine, and gamma-butyrolactone on 3-hydroxybenzylhydrazine induced accumulation of dopa in the DA rich corpus striatum and in the noradrenaline (NA) rich remainder of the forebrain of rats. Oxotremorine and physostigmine increased the dopa accumulation following dopadecarboxylase inhibition in both DA neurons and NA neurons, indicating that these drugs increase the synthesis of both amines. The results also suggest that the effect on the DA neurons is probably evoked by stimulation of muscarinic receptors outside the DA nerve terminals leading to enhancement of the nerve impulse flow. 21 references.

000043 Anden, Nils-Erik; Grabowska, Maria. Department of Pharmacology, University of Goteborg, Fack, S-400 33 Goteborg 33, Sweden **FLA 136: selective agonist at central alpha-adrenoreceptors mediating changes in the turnover of noradrenaline.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 298(3):239-243, 1977.

In a study of the agonist action of FLA 136 on central alpha adrenoreceptors mediating changes in the turnover of noradrenaline, FLA 136 did not change the hindlimb flexor reflex of spinal rats, but it reduced the clonidine induced increase in this reflex at high doses. The alpha-methyltyrosine induced disappearance of noradrenaline in the rat central nervous system was decelerated by FLA 136, with a peak effect after 15mg/kg i.p. The accumulation of Dopa following decarboxylase inhibition was inhibited by FLA 136 in a noradrenaline predominant region (brainstem). The effect on the utilization appeared to be greater than that on the synthesis in agreement with a slight increase observed in the concentration of noradrenaline in the brain and the spinal cord. FLA 136 reduced the alpha-methyltyrosine induced disappearance of dopamine, decreased the Dopa accumulation following decarboxylase inhibition in the dopamine rich corpus striatum and increased the concentration of dopamine. Yohimbine almost completely inhibited the effect of FLA 136 on the utilization and on the synthesis of noradrenaline whereas phenoxybenzamine was much less effective on the change in the utilization. Yohimbine and phenoxybenzamine were about equipotent, however, in accelerating the disappearance of noradrenaline produced by alpha-methyltyrosine alone. FLA 136 does not stimulate the postsynaptic alpha-adrenoreceptors mediating the increase in flexor reflex activity but it probably decelerates the utilization of noradrenaline by a stimulation of another kind of alpha-adrenoreceptors sensitive to yohimbine. The latter receptors might occur on the noradrenergic neurones (presynaptic receptors). 15 references. (Author abstract modified)

000044 Aronstam, Robert S.; Abood, Leo G.; Baumgold, Jesse. Center for Brain Research, University of Rochester School of Medicine, Rochester, NY 14642 **Role of phospholipids in muscarinic binding by neural membranes.** Biochemical Pharmacology (Oxford). 26(18):1689-1695, 1977.

To determine the importance of lipids for the muscarinic cholinergic receptor of rat brain, tritiated 3-quinuclidinyl benzilate ((3H)QNB) was used to measure muscarinic binding; and the effects of phospholipids, fatty acids, cationic detergents, ions, and temperature on the bindings were investigated. The addition of phosphatidylserine (PS) enhances specific muscarinic binding up to 40% while phosphatidic acid (PA) and phosphatidylinositol (PI) are less effective, and neutral lipids are generally without effect. Unsaturated fatty acids, but neither saturated fatty acids nor the methyl esters of unsaturated fatty acids, inhibit (3H)QNB binding, the amount of inhibition being proportional to the degree of unsaturation. The additional of acidic phospholipids restores some binding activity after phospholipase treatment. Inhibition of (3H)QNB binding by low concentrations of cationic detergents is completely reversible by PS and PA. Ionic, pH and temperature effects on QNB binding indicate that the association of QNB with muscarinic receptors involves primarily hydrophobic interactions. 35 references. (Author abstract modified)

000045 Assaf, S. Y.; Miller, J. J. Department of Physiology, University of British Columbia, Vancouver, British Columbia V6T 1W5, Canada **Excitatory action of the mesolimbic dopamine system on septal neurones.** Brain Research (Amsterdam). 129(2):353-360, 1977.

To further delineate the cells of origin of the dopaminergic fiber system innervating the lateral septal area originating in the A10 region of the ventromedial tegmentum in rats, retrograde axonal transport of horseradish peroxidase was analyzed, the change in septal cell discharge elicited by A10 stimulation was observed, and the effects of 6-hydroxydopamine (6-OHDA) and haloperidol on the synaptically evoked response patterns was determined. Results provide evidence for monosynaptic excitatory projection from the A10 mesencephalic region to the lateral septal area. The antagonistic action of haloperidol on the A10 evoked activity in the lateral septum together with the elimination of the excitatory responses in the majority of neurones in this region following 6-OHDA lesions strongly suggests that the changes in septal unit activity elicited by A10 stimulation may be attributed to the mesolimbic dopaminergic pathway. 22 references.

000046 Bade, Petra; Rommelspacher, Hans; Strauss, Sabine. Institut fur Neuropsychopharmakologie der Freien Universitat Berlin, Ulmenallee 30, D-1000 Berlin 19, Germany **N-acetyltransferase activity in pineal gland of rats treated with pargyline.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 297(2):143-147, 1977.

N-acetyltransferase (NAT) activity in pineal gland of rats treated with pargyline was studied by injecting 20mg/kg of the monoamine oxidase inhibitor each day up to 9 days and observing circadian rhythm reactions. NAT activity remained unchanged during the light period, but increases above controls were observed during darkness. The latter effect was not affected by subchronic administration. The pargyline activated not only NAT, but a second enzyme with different kinetic parameters. The drug leveled the circadian changes in the content of serotonin, whereas noradrenaline and 5-hydroxyindoleacetic acid were hardly influenced. Findings are explained such that pargyline activates the enzyme by intracellular mechanism, rather than via beta receptors, as suggested by previous researchers. The increased serotonin concentration might be responsible for the additional enzymatic activation. 26 references. (Author abstract modified)

000047 Baldessarini, Ross J.; Kula, Nora S.; Walton, Kenneth G.; Borgman, Robert J. Mailman Research Center, McLean Hospital, 115 Mill St., Belmont, MA 02178 **Hydrolysis of diester prodrugs of apomorphine.** Biochemical Pharmacology (Oxford). 26(19):1749-1756, 1977.

To test the hypothesis that the prolongation of the behavioral effects of O, O' diesters of apomorphine relative to those of apomorphine reflects depot properties of the esters,

and/or decreasing rates of hydrolysis to the presumably active metabolite, apomorphine, mouse brain apomorphine was assayed by a fluorimetric method that can distinguish apomorphine from its monophenolic analogues and was confirmed by thin layer chromatography. Apomorphine fluorescence was recovered after systemic injection of di-isobutyrylapomorphine as well as after apomorphine, but its half-life in brain was greatly prolonged after administration of the ester. Ester hydrolysis also occurred in vitro with minces or homogenates of rat tissue, yielding a product with the fluorescent and chromatographic properties of free apomorphine which also stimulated the activity of a dopamine sensitive adenylate cyclase in rat striatal homogenates, sensitive to apomorphine but not its esters. Most of the activity resided in the high speed supernatant fraction of liver; high esterase activity was found in rat plasma and was present in most tissues. This reaction was dependent on temperature, tissue and substrate concentration, followed saturable kinetics, and was inhibited by triorthocresylphosphate, an esterase inhibitor. This apparent enzymatic reaction proceeded at rates varying inversely with the size of the ester substituent. These results support the suggestion that the rate of hydrolysis may be related to desirable prolongation of action of ester prodrugs of apomorphine. 29 references. (Author abstract modified)

000048 Balment, R. J.; Jones, I. Chester; Henderson, I. W. Dept. of Zoology, University of Sheffield, Western Bank, Sheffield S10 2TN, England **Time course of lithium-induced alterations in renal and endocrine function in normal and Brattleboro rats with hypothalamic diabetes insipidus.** British Journal of Pharmacology (London). 59(4):627-634, 1977.

A lithium chloride (Li) supplemented diet was given to Long-Evans (LE) rats and Brattleboro rats with hypothalamic diabetes insipidus (DI rats) to investigate the actions of Li on renal and endocrine function in the presence (LE) and absence (DI) of vasopressin. In the LE rats, early effects of Li included: 1) a water deficit; 2) increased plasma antidiuretic (ADH) titers; 3) slightly increased plasma renin activities (PRA) and plasma osmolarities; 4) urinary losses of sodium (Na), potassium (K), and chloride (Cl); and 5) decreased urinary osmolarity. After 12 days of Li, LE rats had elevated plasma ADH titers but reduced pituitary oxytocic and antidiuretic activities. Electrolyte balances were gradually reestablished, although drinking and urine production increased in parallel to reach twice the control values. Aldosterone and corticosterone secretory rates and their peripheral plasma concentrations were unchanged both after 24 h and after 28 days of Li. In DI rats, Li elecited no water deficit or saluresis. Although polyuria and polydipsia were exacerbated, urinary osmolarity did not change over the 12 da observation period. After 12 days of Li, the PRA of DI rats, but not that of LE rats, was increased. It is suggested that Li has primary, perhaps direct, actions on neural processes governing thirst, and on renal electrolyte and water transport systems. It is concluded that the overall renal actions of Li are modulated by vasopressin rather than adrenocorticosteroids. 32 references. (Author abstract modified)

000049 Banerjee, Shailesh P.; Kung, Lily S.; Riggi, Stephen J.; Chanda, Subir K. Departments of Pharmacology and Toxicology, University of Rochester School of Medicine and Dentistry, Rochester, NY 14620 **Development of beta-adrenergic receptor subsensitivity by antidepressants.** Nature (London). No. 5619:455-456, 1977.

The molecular basis for antidepresant induced noradrenergic subsensitivity is studied by examining the kinetic properties of the beta-adrenergic receptors in the microsomal suspension of rat brain using a potent beta-adrenergic receptor antagonist H3-dihydroalprenolol as a radiolabeled ligand. The main mechanism indicated was a reduction in the number of receptors, leading to a resistant state of adenylate cyclose towards noradrenaline after chronic administration of antidepressants. Results suggest that although the level of noradrenaline may have an important role in controlling beta-adrenergic receptor density, the concentration of this neurotransmitter at the synaptic cleft is not the only mechanism for the regulation of beta-adrenergic receptor concentration. 24 references.

000050 Bartholini, G.; Stadler, H. F. Hoffman-La Roche & Co., Ltd., Basel, Switzerland **Evidence for an intrastriatal GABA-ergic influence on dopamine neurones of the cat.** Neuropharmacology (Oxford). 16(5):343-347, 1977.

In the gallamine immobilized cat, dopamine (DA) and acetylcholine (ACh) liberated within the caudate nucleus were collected by means of a push/pull cannula and measured radioenzymatically to test for intrastriatal gammaaminobutyric (GABA) influence on DA neurones. The release of DA was markedly enhanced during perfusion with Ringer solution containing bicuculline or picrotoxin. In contrast, the ACh liberation was only slightly increased by bicuculline and remained unchanged after picrotoxin. In homogenates of the caudate nucleus perfused with Ringer plus bicuculline, the acetylcholine esterase activity was slightly reduced, whereas it was unaffected after picrotoxin. Addition of GABA to the Ringer solution reduced the cicuculline and the picrotoxin induced enhancement in DA release. GABA alone diminished the spontaneous DA output. These data provide evidence for the presence of GABAergic terminals within the neostriatum and their possible influence on the DA neurones; this influence is probably not mediated by changes of an intrastriatal cholinergic activity. 21 references. (Author abstract)

000051 Bartholini, Giuseppe. Dept. of Experimental Medicine, F. Hoffman-La Roche & Co., Ltd., Basle, Switzerland **Interaction of GABA, dopamine, and acetylcholine in cat striatum: pharmacological considerations.** Psychopharmacology Bulletin. 13(1):32-33, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, a study of the interaction between dopamine (DA), acetylcholine (ACh), and gammaaminobutyric acid (GABA) neurons in the cat striatum was reported. Gallamine immobilized or freely moving cats were perfused via acutely or chronically implanted push/pull cannulae, respectively, in the caudate nucleus. Neuroleptic drugs (chlorpromazine, haloperidol, thioridazine, clozapine) administered intravenously (iv) caused a marked increase in the release of DA and ACh in the striatum without changing the tissue concentration of the transmitters or the ACh-esterase activity, indicating that the turnover of the transmitters was increased. Dopaminergic agents (L-Dopa and apomorphine) decreased the spontaneous ACh output as well as the neuroleptic induced increase in ACh release. Electrical stimulation of the substantia nigra (SN) reduced the ipsilateral striatal ACh output. DA output from the caudate nucleus was increased by systemically administered cholinomimetic agents such as oxotremorine. Striatal DA turnover and its neuroleptic induced enhancement was reduced by anti-ACh compounds (atropine and scopolamine). The release of DA from striatum was enhanced by iv injection of bicuculline as well as by infusion of bicuculline directly into the substantia nigra. It is proposed that: 1) the release of striatal DA is influenced by

both excitatory cholinergic and inhibitory GABA-ergic activity within both striatum and SN; 2) DA inhibits striatal cholinergic (inter)neurons; and 3) striatal control of motoricity and muscle tone is probably determined by the complex interaction of these transmitters. However, although it is known that imbalance between cholinergic and dopaminergic transmission results in parkinsonian symptoms and possibly in Huntington's chorea, the involvement of GABA in extrapyramidal disorders remains obscure. 5 references.

000052 Beleslin, D. B.; Bellur, S. N.; Radulovacki, M. Department of Pharmacology, University of Illinois at the Medical Center, P. O. Box 6998, Chicago, IL 60680 **Effects of carbachol and nicotine injected into the cerebral ventricles on electromyogram of conscious cats.** Brain Research Bulletin. 2(1):75-77, 1977.

The effects of carbachol and nicotine on the electromyogram of conscious cats after injection into the cerebral ventricles were investigated in order to determine the mechanism by which these drugs produce movement disorders. Carbachol and nicotine injected into the cerebral ventricles produced high amplitude and fast frequency activity in the electromyogram of conscious cats. Carbachol, much more than nicotine, caused bursts of such activity spaced at irregular time intervals accompanied by marked activity in the electrooculogram. In addition carbachol, but not nicotine, caused adynamia. The effect of nicotine lasted 3 to 5 hr, while the effect of carbachol lasted up to 6 hr. The obtained results suggest that central muscarinic and nicotinic mediations are involved in the activation of the motor efferent system. 7 references. (Author abstract)

000053 Benakis, A. Laboratory of Drug Metabolism, Department of Pharmacology, University of Geneva School of Medicine, Geneva, Switzerland **Specific localization of drugs at the hypophysis level and side effects: the case of neuroleptics.** Acta Pharmacologica et Toxicologica (Kobenhavn). 41(Supplement 1):110-111, 1977.

Results of whole body autoradiographic studies concerning localization of neuroleptics at the hypophysis level presented at the May 1977 Conference on Autoradiography in Pharmacology and Toxicology held in Uppsala, Sweden are summarized. 14C-Chlorpromazine in autoradiography studies in rats indicated an important localization of the radioactivity in the hypophysis level, but also in the brain. Other autoradiography studies using a new labelled neuroleptic, 14C-Sulpiride, revealed a very important localization in the hypophysis and none at all in the brain. Additional experiments allowed the quantification of this localization of radioactivity in the hypophysis according to time and using HPLC techniques it was shown that the radioactivity measured is due only to unchanged Sulpiride. An ultrastructural study in rat hypophysis treated with Sulpiride revealed that prolactin cells show all the morphological criteria of high stimulation of hormonal synthesis. These results suggest that the prolactin stimulation of Sulpiride can be explained by the direct action of this drug at the hypophysis level. 6 references. (Author abstract modified)

000054 Bender, David A.; Smith, William R. D.; Humm, R. Paul. Courtauld Institute of Biochemistry, Middlesex Hospital Medical School, London W1P 7PN, England **Effects of benserazide on tryptophan metabolism in the mouse.** Biochemical Pharmacology (Oxford). 26(17:1619-1623, 1977.

Results of a previous study of the effects of benserazide (N-(seryl)-N-(2,3,4-trihydroxybenzyl)-hydrazine, Ro4-4602) on tryptophan metabolism in the mouse (David, 1975) are reviewed; and an alternate hypothesis is advanced and empirical test results reported. Benserazide is known to inhibit aromatic amino acid decarboxylase. David has shown that administration of (1-14C)tryptophan to mice leads to a considerable evolution of 14CO2, and that this is inhibited by prior administration of benserazide. This was interpreted as indicating that decarboxylation to tryptamine may be a major pathway of tryptophan metabolism in the mouse. In the present work, an alternative explanation is advanced. Evolution of 14CO2 from (1-14C)tryptophan could be due to metabolism of the alanine released by the action of kynureninase. In this case there would also be evolution of 14CO2 following administration of (2-14C)tryptophan. This has been demonstrated. It has further been shown that benserazide is a potent inhibitor of kynureninase and kynurenine aminotransferase in the mouse. The result of this inhibition is both a decrease in oxidative metabolism of tryptophan and an increase in the concentration of kynurenine in the liver. These effects are seen at levels of the drug similar to doses used clinically in treatment of Parkinson's disease. One effect of reduced oxidative metabolism of tryptophan would be reduced synthesis of nicotinamide, and it is possible that patients treated with benserazide may show some signs of niacin deficiency. 13 references. (Author abstract modified)

000055 Bhargava, Hemendra N.; Matwyshyn, George A. Dept. of Pharmacognosy and Pharmacology, College of Pharmacy, University of Illinois Medical Center, Chicago, IL 60612 **Brain serotonin turnover and morphine tolerance-dependence induced by multiple injections in the rat.** European Journal of Pharmacology (Amsterdam). 44(1):25-33, 1977.

To determine the effect of morphine dependence/tolerance on brain serotonin level and turnover, tolerance to and physical dependence on morphine in the rat was induced by injecting increasing doses of morphine sulfate (M.S.)administered intraperitoneally twice daily for 14 days. The last dose of M.S. was 200mg/kg. This procedure produced a four fold tolerance to morphine as evidenced by the increased dose of morphine required to produce analgesia. The degree of dependence was quantified by determining the naloxone ED50 for the stereotyped withdrawal jumping response. Body weight loss and hypothermic responses during abrupt and naloxone induced withdrawal were also measured. The degree of tolerance and dependence produced by multiple injection procedure was comparable to that produced by two pellets containing 75mg of morphine base implanted for 3 days. The level and turnover of brain serotonin, determined 6 or 12 hr after the last morphine sulfate injection did not differ significantly from that of saline injected control animals. These data indicate that multiple injection technique produces a mild degree of tolerance to, and physical dependence on, morphine which was not related to changes in brain serotonin level or turnover. 27 references. (Author abstract modified)

000056 Biggio, G.; Guidotti, A.; Costa, E. Department of Pharmacology, University of Cagliari, Cagliari, Italy **On the mechanism of the decrease in cerebellar cyclic GMP content elicited by opiate receptor agonists.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 296(2):117-121, 1977.

To further explore the specificity of the link between opiate receptors and changes in 3',5'-cyclic guanosine monophosphate (cGMP), morphine and other opiate receptor agonists were directly injected into the left or both caudate nuclei or the left cerebellar hemisphere, and assays were performed on cerebellar cortex and deep cerebellar nuclear

punches. Morphine, dextromoramide and vimonol R2 in analgesic doses decreased in rat cerebellar cortex; morphine also decreased the cGMP content in deep cerebellar nuclei. Intrastriatal but not intracerebellar injections of morphine decreased cerebellar cGMP content. Naltrexone, an opiate receptor antagonist, but not apomorphine, a dopaminergic receptor agonist, blocked the effect of morphine on cerebellar cGMP. Pretreatment with 3-acetylpyridine (3-AP), which destroys the climbing fibers, failed to antagonize the effect of morphine on cerebellar cGMP. These results suggest that activation of opiate receptors in striatum decreases cerebellar cGMP content presumably by reducing activity in the mossy fiber excitatory input to cerebellum. 25 references. (Author abstract modified)

000057 Bigler, Allan J.; Bogeso, Klaus P.; Toft, Anders; Hansen, Villy. Dept. of Synthetic Chemistry, H. Lundbeck & Co., A/S Ottiliavej 7-9, DK-2500 Copenhagen-Valby, Denmark **Quantitative structure-activity relationships in a series of selective 5-HT uptake inhibitors.** European Journal of Medicinal Chemistry (Paris). 12(3):289-295, 1977.

Methods for the synthesis of a series of 1-aryl-(3-(dimethylamino)propyl)phthalans and their demethylated derivatives are described. In vitro studies of the inhibition of uptake of radiolabeled serotonin (5-hydroxytryptamine, 5-HT) by rabbit platelets and in vivo studies of the abilities of the test compounds to potentiate the 5-hydroxytryptophan (5-HTP) syndrome in mice showed the compounds to possess potent, selective 5-HT uptake inhibiting properties. Quantitative structure/activity relationships were established. It is concluded that the drug/receptor interaction might be explained by the electron attracting properties of the aromatic substituents. 34 references. (Author abstract modified)

000058 Blume, A. J.; Chen, C.; Foster, C. J. Department of Physiological Chemistry, Roche Institute of Molecular Biology, Nutley, NJ 07110 **Muscarinic regulation of cAMP in mouse neuroblastoma.** Journal of Neurochemistry (Oxford). 29(4):625-632, 1977.

To elucidate muscarinic regulation of cyclic 3,5-adenosine monophosphate (cAMP) in mouse neuroblastoma, the effects of acetylcholine, other cholinergic agonists, and two depolarizing cholinergic antagonists were studied. The neurotransmitter acetylcholine regulates cAMP concentrations in mouse neuroblastoma cells (clone NS20). In these cells, the action of acetylcholine appears to be specific: it does not alter basal concentrations of cAMP, but prevents the elevation of cAMP which is mediated by either adenosine or prostaglandin E1. The receptor for acetylcholine which is involved in this phenomenon has been identified as muscarinic. Pilocarpine and carbamylcholine, but not acetate or choline, will substitute for acetylcholine. Furthermore, the action of 10mu-M-carbamylcholine is blocked by less than or equal nM concentrations of atropine, isopropamide or 3-quinuclidinylbenzilate, but not by mM concentrations of d-tubocurarine or hexamethonium. Of eight cholinergic antagonists tested, decamethonium and succinylcholine were the only two which were able to substitute for acetylcholine. These two antagonists are known to cause depolarization of postsynaptic cells. Decamethonium and succinylcholine appear to interact with the same muscarinic receptor, as their actions are also blocked by low concentrations of 3-quinuclidinylbenzilate. In addition to these two depolarizing antagonists, the ionophores, valinomycin, A23187 and X537A, were also found to prevent elevation of cAMP concentrations. The involvement of specific membrane depolarization as being the active agent by which acetylcholine inhibits elevation of cAMP concentrations is discussed. 37 references. (Author abstract modified)

000059 Boschi, Gabrielle; Derappe, Christian; Rips, Richard. Unite de Pharmacologie Chimique de l'INSERM, 17, rue du Fer-a-Moulin, F-75005 Paris, France **6-OHDA and its analogues: chemical mechanism of neurotoxicity. Study of the oxidation of orthosubstituted dopamines.** European Journal of Medicinal Chemistry (Paris). 12(3):227-230, 1977.

In vitro oxidation of the products formed by various orthosubstituted dopamine (DA) analogs was performed to determine whether the formation of aminochrome may be responsible for the destruction of catecholamine nerve terminals produced by 6-hydroxydopamine (6-OHDA) and 6-aminodopamine (6-ADA) in vivo. Oxidation of DA produced the largest amount of aminochrome, while under the same experimental conditions, 6-OHDA produced the least amount of aminochrome. These findings do not support the hypothesis that aminochrome is responsible for the neuron degeneration produced by 6-OHDA and 6-ADA. Two DA derivatives which do not have neurotoxic effects, 6-nitro-DA and 6-methyl-DA, produced orthoquinone derivatives, while 6-OHDA and 6-ADA produced paraquinone derivatives (in addition to aminochrome) upon oxidation. It is suggested that these paraquinone oxidation products may be involved in the induction of nerve degeneration by 6-OHDA and 6-ADA. 36 references.

000060 Bradley, P. B.; Bramwell, G. J. Department of Pharmacology (Preclinical), Medical School, Birmingham B15 2TJ, England **Stereospecific actions of morphine on single neurones in the brain stem of the rat.** Neuropharmacology (Oxford). 16(7/8):519-526, 1977.

The effects of microiontophoretically applied morphine, levorphanol, and dextrorphan were compared on the firing rate of spontaneously active brainstem neurons in the rat. Both morphine and levorphanol produced three different effects: excitation, excitation followed by long-lasting depression, or long-lasting depression. Dextrorphan produced only excitation or short lasting depression. Depression produced by morphine and levorphanol, but not by dextrorphan, was antagonized by naloxone or nalorpine, whereas excitation was unaffected or potentiated. It was concluded that long-lasting depression of brainstem neuronal firing produced by morphine or levorphanol represents a stereospecific action in the rat. 21 references. (Author abstract modified)

000061 Braestrup, C. Psychopharmacological Research Laboratory, St. Hans Mental Hospital, Department E, DK-4000 Roskilde, Denmark **Biochemical differentiation of amphetamine vs methylphenidate and nomifensine in rats.** Journal of Pharmacy and Pharmacology (London). 29(8):463-470, 1977.

In a study of biochemical differentiation of amphetamine vs. methylphenidate and nomifensine in rats, amphetamine like stimulants were divided into two groups, one in which the stereotyped behavior was not antagonized by reserpine: ((+)-amphetamine, (-)-amphetamine, methamphetamine, phenmetrazine and phenethylamine) and another group in which the behavioral effects were blocked by reserpine (methylphenidate, nomifensine, pipradrol and amfonelic acid). Both groups increased homovanillic acid (HVA) in whole brain 2 h after administration. The methylphenidate group also increased brain 3,4 dihydroxyphenylacetic acid (DOPAC) in naive rats; whereas the (+)-amphetamine group decreased DOPAC in naive rats, as well as in reserpinized rats, alpha-

methyl-p-tyrosine treated rats, and after acute hemisection. The reserpine antagonism of the methylphenidate group induced stereotyped behavior was partially reversed by type A monoamine oxidase inhibition. The (+)-amphetamine group induced stereotyped behavior was not blocked by short time pretreatment with alpha-methyltyrosine, only by longer pretreatment intervals. The mechanisms by which the two groups are differentiated biochemically are discussed with special attention to possible intraneuronal inhibition of dopamine oxidation by the (+)-amphetamine group. 50 references. (Author abstract modified)

000062 Branchey, L.; Friedhoff, A. J. Department of Psychiatry, New York University School of Medicine, New York, NY **Effects of repeated administration of morphine on tyrosine hydroxylase in the rat brain.** Neuropsychobiology (Basel). 2(5/6):307-312, 1976.

The enzymatic changes in rats exposed to repeated morphine administration were compared with those changes found in rats exposed to the drug once. Tyrosine hydroxylase (TH) was measured in the caudate of rats subjected to two series of implantations of morphine pellets and in rats subjected to implantations of placebo pellets. After 23 days it was found that the rats who had received morphine for the second time had significantly lower TH levels than those treated for the first time. It is concluded that these results suggest the existence of a biological memory for a prior exposure to morphine, which is capable of influencing the response of a brain enzyme when morphine is again administered after a period of withdrawal. 10 references. (Author abstract modified)

000063 Breyer, Ursula; Winne, Dietrich. Institut fur Toxikologie, Pharmakologisches Institut, 7400 Tubingen, Germany **Absorption and metabolism of the phenothiazine drug perazine in the rat intestinal loop.** Biochemical Pharmacology (Oxford). 26(14):1275-1280, 1977.

The absorption and metabolism of the phenothiazine drug perazine, extensively used as a neuroleptic in some countries, were studied in the rat intestinal loop. Jejunal loops were instilled with (35S)perazine and venous blood from the loops collected. Plasma, erythrocytes, intestinal wall and intestinal contents were analyzed for perazine and its metabolites. Within 60 min. 57% of the material appeared in blood, much of it in the form of unchanged perazine. Principal metabolites present in plasma were 3-hydroxyperazine glucuronide and perazine sulfoxide; besides the sulfoxide, red cells contained small quantities of desmethyl perazine. This metabolite was predominantly located in the intestinal wall, although it also occurred in intestinal contents. Besides perazine as the major compound, small amounts of hydroxyperazine glucuronide and desmethyl perazine and traces of perazine N-oxide were present in the intestinal lumen. It is concluded that even small doses of perazine, comparable to therapeutic doses, are largely absorbed unchanged from the rat intestine; therefore, intraperitoneal injection instead of oral dosage to circumvent intestinal first pass elimination does not seem justified. 27 references. (Author abstract modified)

000064 Buckholtz, Neil S.; Boggan, William O. Department of Biochemistry, Medical University of South Carolina, Charleston, SC 29401 **Monoamine oxidase inhibition in brain and liver produced by beta-carbolines: structure-activity relationships and substrate specificity.** Biochemical Pharmacology (Oxford). 26(21):1991-1996, 1977.

The inhibition of monoamine oxidase (MAO) in mouse brain and liver homogenates by a series of beta-carbolines was studied in order to determine structure/activity relationships and substrate specificity. The compounds studied were: 1) harman; 2) 6-methoxyharman; 3) norharman; 4) harmol; 5) 6-methoxyharmalan; 6) harmaline; 7) harmalol; 8) 6-methoxytetrahydronorharman; 9) tetrahydronorharman; 10) tetrahydroharman; 11) 6-methoxytetrahydroharman; 12) 6-hydroxytetrahydroharman; 13) tetrahydroharmine; and 14) tetrahydroharmol. With tryptamine as substrate, norharman was the most potent inhibitor in the liver; addition of a methyl group, saturation of the ring, or addition of a 6-methoxy group at carbon 6 decreased inhibition. Harmine and harmaline were the most potent inhibitors in the brain. A methoxy group at carbon 7 led to greater inhibition than one at carbon 6, regardless of ring saturation. In general, there was greater MAO inhibition in brain than in liver. 6-Methoxytetrahydroharman produced greater inhibition with serotonin as substrate than with beta-phenylethylamine, both in vitro and in vivo, suggesting that it is a relatively selective inhibitor of MAO type A. 32 references.

000065 Burks, Thomas F; Dafny, Nachum. Department of Pharmacology, University of Texas Medical School at Houston, Houston, TX 77030 **Morphine and 5-hydroxytryptamine interactions in rat hypothalamus and pineal body.** Experimental Neurology. 55(2):458-468, 1977.

Morphine and 5-hydroxytryptamine (5-HT) interactions were studied in rat hypothalamus and pineal body by determining the effects of morphine on acoustic evoked responses. The predominant effect of morphine was to increase the amplitudes of evoked response components in the hypothalamus and especially in the pineal body. Treatment of animals with tryptophan to increase brain concentrations of 5-HT enhanced responsiveness to morphine. Treatment with parachlorophenylalanine to decrease brain 5-HT concentrations decreased responsiveness to morphine. The results indicate that brain 5-HT participates in the effects of morphine on sensory evoked responses. 42 references. (Author abstract modified)

000066 Buterbaugh, G. G.; London, Edythe D. Dept. of Pharmacology, University of Maryland School of Pharmacy, Baltimore, MD 21201 **The relationship between magnitude of electroshock stimulation and the effects of digitoxigenin, pentylenetetrazol and brain monoamine reduction on electroshock convulsive thresholds.** Neuropharmacology (Oxford). 16(9):617-623, 1977.

The effects of digitoxigenin (DIGT), pentylenetetrazol (PTZ), drug induced brain monoamine reduction and combinations of these treatments on electroshock convulsive thresholds were studied in mice. The results demonstrate the greater effectiveness of both monoamine reduction and DIGT in lowering electroshock thresholds as the severity of electroshock activated convulsions increases. DIGT and PTZ had contrasting effects on electroshock thresholds, especially following brain monoamine reduction. Results obtained with p-chlorophenylalanine or alpha-methyl-p-tyrosine indicated that these effects of reserpine on electroshock convulsive thresholds were correlated with reduction in brain serotonin concentrations. A subconvulsant dose of PTZ decreased all three electroshock thresholds equally. Monoamine reduction was associated with either no change or enhancement of this effect of PTZ. The results support the concept that at least part of digitoxigenin's action involves an interaction with central monoaminergic neurons activated by and functionally involved in the spread of seizure discharge. 20 references. (Journal abstract modified)

000067 Caldwell, J.; Croft, Jane E.; Smith, R. L.; Snedden, W. Department of Biochemical and Experimental Pharmacology, St. Mary's Hospital Medical School, London W2 1PG, England **The metabolic fate of (14C)-phenobarbitone in the rat and the effect of chronic administration and dose size.** British Journal of Pharmacology (London). 60(2):295P-296P, 1977.

The metabolic fate of phenobarbitone and the effect of dose size and chronic administration on its metabolism was studied in the rat. After intraperitoneal injection of 14C-phenobarbitone (PB), 24 hr urine contained unchanged PB (14% of dose), P-hydroxyphenobarbitone (PHPB), excreted free (16%) and as its glucuronide conjugate (9%), and an unknown water soluble metabolite (4%). In another experiment, the metabolites in bile were PB (5% of dose), PHPB glucuronide (21%), and the unknown metabolite (9%). The rate of excretion and nature of the metabolic products were essentially similar at doses of 5-100mg/kg. Unexcreted PB was associated mainly with the muscle, fat, and bones and in the blood. There were no marked differences when the rats were injected daily for up to 14 days rather than for 1 day in either rate of excretion or pattern of metabolism. The results support the view that the tolerance which occurs to this drug does not have its origin in altered drug disposition. 2 references.

000068 Carter, C. J.; Pycock, C. J. Department of Pharmacology, Medical School, University of Bristol, Bristol BS8 1TD, England **Possible importance of 5-hydroxytryptamine in neuroleptic-induced catalepsy in rats.** British Journal of Pharmacology (London). 60(2):267P-268P, 1977.

The effect of classical dopamine (DA) agonists and a number of drugs known to modify central 5-hydroxytryptamine (5-HT) mechanisms on catalepsy induced by neuroleptic drugs were studied in rats. Amphetamine administered with either haloperidol, fluphenazine, or pimozide significantly enhanced the cataleptic response. Lower doses of amphetamine did not affect the neuroleptic induced catalepsy, while a high dose tended to reverse the behavior and induce stereotypy. Apomorphine potentiated haloperidol catalepsy significantly, and high doses tended to reverse the cataleptic state. L-dihydoxyphenylalanine (DOPA) in combination with the DA uptake blocking agent nomifensine potentiated the cataleptic response to haloperidol. Quipazine and 5-methoxy-N,N'-dimethyltryptamine and the 5-HT precursor 5-hydroxytryptophan potentiated the cataleptic response of the neuroleptic haloperidol as did the selective 5-HT uptake blocking compounds ORG 6582 and femoxetine. Treatment with the 5-HT antagonists cyproheptadine or methysergide decreased the cataleptic effect of haloperidol. The results suggest that 5-HT function can modify the state of catalepsy relating to blockade of central DA mechanisms. 6 references.

000069 Cassano, G. B.; Placidi, G. F. Clinica Psichiatrica, Universita di Pisa, I-56100 Pisa, Italy **Fetal distribution of neuropsychopharmacological agents.** Acta Pharmacologica et Toxicologica (Kobenhavn). 41(Supplement 1):162-163, 1977.

Results of autoradiographic studies concerning fetal distribution of labelled psychopharmacological agents reported to the May 1977 Conference on Autoradiography in Pharmacology and Toxicology held in Uppsala, Sweden are summarized. The penetration through the placental barrier was found to be controlled by several factors, such as molecular weight, degree of ionization, lipid solubility, and interference with placental enzymatic activity. It is noted that the high diffusibility of some drugs seems to allow a more rapid placental transfer which is quickly interrupted as plasma levels in the mother fall. The less diffusible compounds take longer to pass through the placental barrier, but reach high levels in the fetal organs because of their longer lasting blood levels in the mother. It is concluded that the distribution in the fetus seems to be determined by physicochemical properties of drugs, specific affinity for certain tissues, which may vary with the degree of maturation of the organs, binding properties with tissue components, differences in functional activity, blood flow, and vascularization of the fetal organs. (Author abstract modified)

000070 Cespuglio, Raymond; Calvo, Jose-Maria; Musolino, Rosella; Valatx, Jean-Louis. Departement de Medecine Experimentale, Universite Claude Bernard, 8, Avenue Rockefeller, F-69373 Lyon Cedex 2, France **/Phasic activity in the rat./** Activite phasique chez le rat. Physiology & Behavior. 19(5):589-596, 1977.

To investigate phasic activity at the central level in the rat, phasic activity was recorded during paradoxical sleep and in acute conditions in 53 male adult rats after injection of reserpine or para-chlorophenylalanine. At the external level, during paradoxical sleep, the extraocular muscles lateral rectus, superior rectus, and superior oblique were activated in both phasic and tonic manners. The muscles of the whickers were also activated; these muscular activations were more often than not synchronous with the eye movements. The time distribution of ocular movements was found to be homogenous. It is concluded that reserpine induces phasic muscular activations of the extraocular muscles. 25 references. (Author abstract modified)

000071 Chalfie, Martin; Perlman, Robert L. Department of Physiology, Harvard Medical School, 25 Shattuck St., Boston, MA 02115 **Regulation of catecholamine biosynthesis in a transplantable rat pheochromocytoma.** Journal of Pharmacology and Experimental Therapeutics. 200(3):588-597, 1977.

Experiments were performed on catecholamine biosynthesis in a transplantable rat pheochromocytoma. The tumor contained large stores of norepinephrine and possessed the enzymes necessary for synthesizing norepinephrine from tyrosine. Findings indicated that cell suspensions of the tumor can synthesize norepinephrine from tyrosine in vitro. These suspensions provided a useful new system in which to study the regulation of catecholamine biosynthesis, which results from conversion of tyrosine to dopa. Such studies indicate that the depletion of catecholamine stores plays only a minor role in the increase in norepinephrine synthesis caused by the stimulation of chromaffin cells and suggested that the activation of tyrosine 3-monooxygenase is more involved in this phenomenon. 34 references. (Author abstract modified)

000072 Champakamalini, A. V.; Rao, M. Appaswamy. Department of Zoology, Manasa Gangotri, Yuvaraja's College, Mysore 570006, India **Production of underweight embryos in rats treated with barbiturates during pregnancy.** Experientia (Basel). 33(4):499-500, 1977.

The effect of administering sodium barbital, phenobarbitone, or butobarbitone during pregnancy was investigated in rats. It was shown that these barbiturates affect the litter size and retard the fetal growth markedly. The embryos produced are significantly undersized. These effects do not appear to be related to degree of sedation since the drug, considered as short acting, causes greater damage than long-acting ones. 11 references. (Journal abstract modified)

000073 Cheney, D. L.; Moroni, F.; Malthe-Sorenssen, D.; Costa, E. Laboratory of Preclinical Pharmacology, NIMH, St. Elizabeths Hospital, Washington, DC 20032 **Endogenous modu-**

lators of acetylcholine turnover rate. (Unpublished paper). Washington, DC, NIMH, 1977. 23 p.

To identify receptors for various putative neurotransmitters in the cholinergic neurons of various areas of rat brain, a number of experiments utilizing turnover rates of acetylcholine (TRACh) as an indication of receptor activation were undertaken. Receptors investigated include: 1) dopamine -- the effects of amphetamine, L-Dopa, apomorphine, haloperidol, chlorpromazine, and clozapine; 2) gamma aminobutyric acid (GABA) -- effects of muscimol and diazepam; 3) substance P; 4) neurotensin, somatostatin, and TRH; and 5) methionine, enkephalin, and leucine. Data suggest that measurement of TRACh makes it possible to detect a modulatory role on the ACh metabolism in cholinergic neurons mediated by activation of receptors specific to certain putative neurotransmitters and to exclude an involvement of certain putative neuromodulators in the regulation of specific cholinergic pathways. Data also indicates that changes in TRACh seen in the hippocampus may be due to the modulation of receptors located on either the membranes of excitatory afferents or on the membrane of the cholinergic neurons located in the N. septi medialis. The possible role of the pituitary peptides as neuromodulators is also discussed.

000074 Cho, Arthur K.; Fischer, Joseph F.; Schaeffer, James C. Department of Pharmacology, UCLA Center for Health Sciences, Los Angeles, CA 90024 **The accumulation of p-hydroxyamphetamine by brain homogenates and its role in the release of catecholamines.** Biochemical Pharmacology (Oxford). 26(15):1367-1372, 1977

Characteristics of the process by which rat cortical tissue accumulates p-hydroxyamphetamine (p-OHA) are described and the relationship between p-OHA uptake and catecholamine release from the striatum and cortex is also reported. In studies with P2 preparations from rat cortex the accumulation of p-OHA-(3H) was shown to be temperature dependent but different from the process involved in the accumulation of norepinephrine-(3H)(NE(3h)) by this tissue. The uptake of p-OHA was less sensitive to DMI and cocaine and had a different time dependency. The accumulation of p-OHA was concentration dependent and did not show evidence for saturation at concentrations up to 10 micromoles. The results suggest that much of the observed cortical uptake of p-OHA is not due to the neuronal carrier for norepinephrine. (Author abstract modified)

000075 Clarke, David E.; Jandhyala, Bhagavan. Department of Pharmacology, College of Pharmacy, University of Houston, Houston, TX 77004 **Acute and chronic effects of tetrahydrocannabinols on monoamine oxidase activity: possible vehicle/tetrahydrocannabinol interactions.** Research Communications in Chemical Pathology and Pharmacology. 17(3):471-480, 1977.

To elucidate possible vehicle/tetrahydrocannabinol (THC) interactions, acute and chronic effects of delta9-THC and delta8-THC were studied on the monoamine oxidase (MAO) activity of various organs of the rat for two vehicles for the cannabinols (1% Tween 80 in saline and ethanol) and a further control group, given saline only. Neither delta9-THC nor delta8-THC altered MAO activity after one day, and no changes from the saline control were found in the vehicle treated groups. However, drug and vehicle induced changes were observed after 14 days (Tween 80) and 28 days (ethanol) of continuous daily treatment. These data were interpreted upon the basis of a possible time dependent, vehicle/drug interaction at the level of outer mitochondrial membranes. Contrary to previously published reports, no compelling evidence was obtained for any inherent pharmacological effect of the cannabinols upon MAO activity. 22 references. (Author abstract modified)

000076 Clement-Cormier, Yvonne C.; Robison, G. Alan. Department of Pharmacology, University of Texas Medical School, Houston, TX 77025 **Adenylate cyclase from various dopaminergic areas of the brain and the action of antipsychotic drugs.** Biochemical Pharmacology (Oxford). 26(18):1719-1722, 1977.

To determine if dopamine sensitive adenylate cyclase occurs in the median eminence and amygdala and whether a variety of antipsychotic drugs are capable of inhibiting dopamine stimulation of adenylate cyclase from these areas, a series of comparative studies utilizing rat brain homogenates were undertaken. Low levels of dopamine were found to stimulate adenylate cyclase from the striatum, median eminence, olfactory tubercle, nucleus accumbens and amygdala. Apomorphine, known to mimic the pharmacological and physiological effects of dopamine, stimulated adenylate cyclase from the median eminence. Several different classes of drugs effective in the treatment of schizophrenia were potent inhibitors of the stimulation by dopamine of the enzyme from these various regions. The results, considered together with previously published data, support the possbility that the therapeutic effects, as well as the extrapyramidal and endocrinological side-effects, of these antipsychotic agents may be attributable to their ability to block the activation of adenylate cyclase in various areas of the brain. 25 references. (Author abstract modified)

000077 Clow, A.; Elliott, P. N. C.; Jenner, P.; Marsden, C. D.; Pycock, C. University Department of Neurology, Institute of Psychiatry, London SE5, England **Interactions of substituted benzamide drugs with cerebral dopamine pathways.** British Journal of Pharmacology (London). 60(2):268P-269P, 1977.

The interactions of three substituted benzamide drugs, metoclopramide, sulpiride, and clebopride with cerebral dopamine systems were studied in vivo and in vitro in rats and mice. Metoclopramide, sulpiride, clebopride or haloperidol elevated striatal and mesolimbic homovanillic acid (HVA) and DOPAC in rats. Pretreatment with gamma-hydroxybutyrolactone inhibitor of impulse flow prevented the rise in dopamine metabolites. The four drugs also raised straital and mesolimbic HVA and DOPAC levels in the mouse. Atropine partially blocked the HVA elevation caused by haloperidol and sulpiride, but did not affect the metoclopramide and cleboprinde induced increases in HVA. Atropine did not affect increased DOPAC levels induced by haloperidol, clebopride, or sulpiride, but mesolimbic DOPAC in metoclopramide treated animals was reduced. Metoclopramide, sulpiride, and clebopride displaced haloperidol from a (3H)-haloperidol labeled dopamine receptor binding model. Uptake and release of (3H)-dopamine by striatal synaptosomal particles was weakly affected by metoclopramide, and unaffected by sulpiride. Clebopride did not inhibit DA uptake, but had a marked effect on release. The results indicate that substituted benzamides resemble classical neuroleptics in some respects, but differ in others. 3 references.

000078 Clubley, Margaret; Elliot, R. C. School of Biological Sciences, Brunel University, Uxbridge, Middlesex, England **Centrally active drugs and the sympathetic nervous system of rabbits and cats.** Neuropharmacology (Oxford). 16(9):609-616, 1977.

The actions of phenothiazines, benzodiazepines, butyrophenones, pentobarbitone, and propanediol or preganglionic sympathetic activity in the cervical nerve and the descending sympathetic pathway of rabbits and cats were studied. Spontaneous sympathetic discharge in the rabbit was reduced by chlorpromazine, haloperidol, chloridiazepoxide, diazepam and sodium pentobarbitone. Meprobamate had no action, and trifluoperazine produced an increase in discharge. Chlorpromazine reduced hypothalamically evoked discharge in the cat spinal cord and cervical trunk. Latencies of hypothalamically evoked responses and the effect of repetitive stimulation are consistent with a bilateral polysynaptic pathway from the hypothalamus to the spinal sympathetic neurons. 30 references. (Journal abstract modified)

000079 Cohen, Y. Department of Pharacodynamics, University of Paris XI, F-92290 Chatenay-Malabry, France **Autoradiographic studies with sympathomimetic amines.** Acta Pharmacologica et Toxicologica (Kobenhavn). 41(Supplement 1):114-115, 1977.

The results of whole body autoradiographic studies of 14C-labelled sympathomimetic amine distributions in mice, rats, and guinea-pigs reported at the May 1977 Conference on Autoradiography in Pharmacology and Toxicology held in Uppsala, Sweden are summarized. The amines tested were: ephedrine, norephedrine, amphetamine, and tyramine. The affinity of ephedrine and norephedrine for the organs of all animals decreased. The brain was always slightly radioactive. In rats, radioactivity was accounted for alpha-methyloctopamine after 2 to 8 hours. An important difference was found in the distribution pattern in the albino and colored animals. In the colored animals, ephedrine, norephedrine, and amphetamine, but not tyramine, concentrated in the melanic structures such as the pigmented iris and the choroid. In the guinea-pig (but not the rat), the pigmented skin was charged with ephedrine or norephedrine. Results were commented on in the context of the false transmitter theory. 4 references. (Author abstract modified)

000080 Consolo, S.; Ladinsky, H.; Peri, G.; Garattini, S. Istituto di Ricerche Farmacologiche 'Mario Negri', Via Eritrea, 62-20157 Milan, Italy **Action of S 1432, a new psychotropic drug, on the central cholinergic system.** Biochemical Pharmacology (Oxford). 26(16):1517-1520, 1977.

Neurochemical characteristics of a new tranquilizer, S 1432 (hydroxyethyl-9',purinyl-6'-1-benzhydryl-4-piperazine dihydrochloride) are described and comparisons with the benzodiazepines are made. S 1432, an anticonvulsant, muscle relaxant and CNS depressant in experimental animals, increased the acetylcholine level in the striatum (50%), hippocampus (25%), and mesencephalon (15%) but not in the diencephalon or hemispheric residuum of the rat at doses of 20 and 40mg/kg, i.p. The effect lasted for about 120 min after a single dose of 40mg/kg. The drug markedly decreased the choline level in the striatum but not in the other brain areas. The action of S 1432 on striatal acetylcholine was not blocked by pimozide indicating that the increase was not modulated through dopaminergic neurons. Furthermore, the drug did not alter whole brain or brain area levels or the turnover of noradrenaline, serotonin or dopamine although there was a tendency towards a decrease in the latter. Pretreatment with S 1432 prevented pentylenetetrazol convulsions in 11/12 rats. Under these conditions, pentylenetetrazol completely antagonized the effect of S 1432 on striatal but not hippocampal acetylcholine. Thus, similarly to diazepam, a biochemical interaction of S 1432 with pentylenetetrazol is demonstrated. 15 references. (Author abstract modified)

000081 Costa, Jonathan L.; Silber, Steven A.; Murphy, Dennis L. NIMH, NIH Clinical Center, Bethesda, MD 20014 **Effects of reserpine and imipramine on vesicular serotonin uptake and storage in intact human platelets.** Life Sciences (Oxford). 21(2):181-188, 1977.

The effects of reserpine and imipramine on intact human platelets were investigated, utlizing brief thrombin treatment to evaluate serotonin (5-HT) uptake into and loss from the vesicular (thrombin releasable) compartment. Less than 5 seconds after its addition reserpine almost completely inhibited the uptake of 5-HT into storage vesicles, but it induced an outward flux of stored 5-HT from vesicles only after more than 2 minutes following its addition. Imipramine, acting over a 30 min. period, caused no loss of vesicular 5-HT but acted within 5 min. to inhibit markedly the movement of cytoplasmic 5-HT into storage vesicles. It thus seems likely that in human platelets, inhibition of vesicular 5-HT uptake does not necessarily lead to the loss of vesicular 5-HT. 18 references. (Author abstract)

000082 Costall, B.; Fortune, D. H.; Naylor, R. J. Postgraduate School of Studies in Pharmacology, University of Bradford, Bradford, W. Yorkshire BD7 1DP, England **5-HT antagonists inhibit neuroleptic and morphine antagonism of the hyperactivity induced by DA from the nucleus accumbens.** British Journal of Pharmacology (London). 60(2):266P-267P, 1977.

Rats were injected bilaterally into the nucleus accumbens (ACB) with dopamine (DA) after pretreatment with nialamide, and subsequently bilaterally injected with 5-hydroxytryptamine (5-HT), fluphenazine, or morphine to test the possibility that neuroleptic agents and morphine may antagonize the hyperactivity induced by DA from the ACB by a mechanism involving enhanced 5-HT. The hyperactivity induced by DA was antagonized by 5-HT, fluphenazine, and morphine. The antagonism of DA induced hyperactivity by submaximal doses of 5-HT, fluphenazine, and morphine was significantly reduced or abolished by the administration of methysergide or cyproheptadine. Both methysergide and cyproheptadine failed to modify the hyperactivity induced by DA injected into the ACB. It is concluded that the ability of morphine or of a neuroleptic agent such as fluphenazine to antagonize the DA induced hyperactivity may be associated with an enhancement of 5-HT function either concomitant or subsequent to a DA receptor blockade. The locus of the 5-HT action may be within the mesolimbic circuits. 8 references.

000083 Coward, D. M.; Doggett, N. S. Dept. of Applied Pharmacology, Univ. of Wales Institute of Science and Technology, King Edward VII Ave., Cardiff CF1 3NU, England **The production of an alternative laboratory model of the Parkinson syndrome using a new benzylimidoylurea derivative LON 954.** Psychopharmacology (Berlin). 52(2):165-171, 1977.

The production of an alternative laboratory model of the Parkinson syndrome using N-carbamoyl-2-(2,6-dichlorophenyl) acetamidine hydrochloride (LON-954) was described. LON-954 caused a reproducible rest tremor in mice, of rapid onset and short duration with no associated rigidity or akinesia and in the absence of any marked changes in body temperature or accompanying peripheral parasympathomimetic effects. This tremor was antagonized by the dopamine receptor agonists L-dihydroxyphenylalanine, bromocriptine, nomifensine and piribedil, as well as by anticholinergic anti-Parkinson drugs having an inhibitory effect on dopamine uptake such as benapryzine and benztropine. In contrast, benzhexol, orphenadrine and tadine had no effect. LON-954 appears to be more

specific than oxotremorine for the detection of drugs having therapeutic potential in the treatment of Parkinson's disease, particularly those exerting their effect through dopaminergic systems. An antagonist BS-100-141, a structural isomer of LON-954 in which the carbonyl and imino groups are reversed, was a potent antagonist of LON-954 induced tremor; it possessed no intrinsic tremorgenic activity of its own. 38 references. (Author abstract modified)

000084 Creese, Ian; Burt, David R.; Snyder, Solomon H. Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Dopamine receptor binding enhancement accompanies lesion-induced behavioral supersensitivity.** Science. 197(4303):596-598, 1977.

The behavioral changes and neurophysiological implications of those changes that occur in rats after specific lesions have been made in the nigrostriatal to dopamine pathway are discussed. The binding of haloperidol to rat striatal dopamine receptors increases after lesions in those rats which are behaviorally supersensitive, as reflected by apomorphine induced contralateral rotations. The nigrostriatal lesion induced by 6-hydroxydopamine may be a useful model of Parkinson's disease in which the nigrostriatal dopamine pathway is degenerated, and the supersensitivity of the dopamine receptors could account for the dramatic therapeutic response to L-dopa. The enhanced binding is associated with an increased number of receptor sites with no change in their affinity. 19 references. (Journal abstract modified)

000085 Crow, T. J.; Deakin, J. F. W.; Longden, A. Division of Psychiatry, Clinical Research Centre, Northwick Park Hospital, Watford Rd., Harrow, Middlesex HA1 3UJ, England **The nucleus accumbens -- possible site of antipsychotic action of neuroleptic drugs?.** Psychological Medicine (London). 7(2):213-221, 1977.

The hypothesis that neuroleptic drugs exert their therapeutic effects by blocking dopaminergic transmission was investigated. The effects of 3 neuroleptic drugs on dopamine turnover in 2 dopaminergically innervated regions of the brain -- the neostriatum and nucleus accumbens -- were examined. The drugs chlorpromazine, thioridazine and fluphenazine, known to be therapeutically active in the treatment of schizophrenia but having different incidence of extrapyramidal side effects, were administered to rats in dose ratios approximating those effective in man. All 3 drugs induced a similar rise in the content of the dopamine metabolite homovanillic acid (HVA) in the nucleus accumbens, while the changes in HVA observed in the neostriatum were in the rank order in which these drugs produce extrapyramidal side effects. While the concentrations of dopamine metabolites in the frontal cortex were too low to assess the possibility that neuroleptic drugs have actions at this level, results are consistent with the hypothesis that these drugs exert their therapeutic effects by dopamine receptor blockade in the nucleus accumbens. 48 references. (Journal abstract modified)

000086 Crow, T. J.; Waddington, J. L. Division of Psychiatry, Clinical Research Centre, Watford Road, Harrow, Middlesex HA1 3UJ, England **Rotational responses to the putative serotonin agonist 5MeODMT following unilateral 5,6-DHT lesions of the median forebrain bundle: a possible role for 5-HT in the control of rotational behaviour.** British Journal of Pharmacology (London). 60(2):265P-266P, 1977.

Median forebrain bundle (MFB) lesions were induced in male rats by unilateral stereotaxic injections of 6-hydroxydopamine (6-OHDA) or the indolamine neurotoxin, 5,6-dihydroxytryptamine (5,6-DHT) and rotational response to the apomorphine were compared with those following treatment with the putative serotonin (5-HT) agonist 5-methoxy-N,N-dimethyltryptamine (MeODMT) to test the possibility of inducing a rotational response to 5-HT agonists in rats with unilateral lesions of ascending 5-HT pathways. There was no significant difference between DA depletion following the 2 lesion procedures, but 5-HT depletion with 5,6-DHT exceeded that with 6-OHDA. 6-OHDA rats showed the expected contralateral rotation to apomorphine; 5,6-DHT rats showed a faster onset and offset of apomorphine induced contralateral rotation, though mean rotations were unaltered. 5MeODMT induced a mild ipsilateral rotation in 6-OHDA lesioned rats treated with nialamide; however, this response was more vigorous in 5,6-DHT lesioned animals. Nialamide alone failed to induce rotation in either group. It was suggested that 5MeODMT induced rotation may be due to a direct activation of forebrain 5-HT receptors on the lesioned side rendered supersensitive by denervation induced by 5,6-HT and by a non-specific effect of 6-OHDA. 3 references.

000087 Crowley, Thomas J.; Hydinger, Marilyn. Primate Biobehavioral Laboratory, Dept. of Psychiatry, Univ. of Colorado Medical Center, Denver, CO 80262 **Comparison of thyrotropin-releasing hormone with melanocyte-stimulating hormone-release inhibiting factor as pentobarbital antagonists in monkeys.** Psychopharmacology (Berlin). 53(2):205-206, 1977.

A study comparing thyrotropin releasing hormone (TRH) with melanocyte stimulating hormone release inhibiting factor (MIF) as a pentobarbital antagonist in monkeys is presented, with some attention to the testing procedures. TRH significantly counteracted pentobarbital narcosis in six monkeys, but MIF did not. Earlier dose response studies in unanesthetized monkeys had shown that this dose of MIF stimulated motor activity; this dose of TRH had shown no stimulant effect, but a higher dose depressed activity. Thus, it is concluded that an MIF dose that stimulates unanesthetized monkeys does not reverse pentobarbital narcosis; a TRH dose that by itself is neither stimulant nor depressant does partially reverse pentobarbital narcosis. 11 references. (Author abstract modified)

000088 Curzon, G.; Fernando, J. C. R. Department of Neurochemistry, Institute of Neurology, Queen Square, London WC1N 3BG, England **Drugs altering insulin secretion: effects on plasma and brain concentrations of aromatic amino acids and on brain 5-hydroxytryptamine turnover.** British Journal of Pharmacology (London). 60(3):401-408, 1977.

An investigation was made in rats of the effects of drugs which alter insulin secretion on the concentrations of tryptophan and other aromatic amino acids in plasma and brain and on 5-hydroxytryptamine (5-HT) and 5-hydroxyindoleacetic acid (5-HIAA) in brain. Drugs used were streptozotocin, propranolol, tolbutamide and phentolamine. Tolbutamide and phentolamine increased the plasma insulin concentrations by 100% and 300%, respectively, but with little effect on the brain/plasma ratios for the aromatic amino acids. Phentolamine and propranolol did not alter the brain/plasma ratios for the aromatic amino acids in streptozotocin treated rats. The results suggest that only large changes of insulin secretion e.g. those associated with food intake or aminophylline injection are likely to alter appreciably the brain/plasma ratios for the aromatic amino acids. Tolbutamide displaced tryptophan from its binding to plasma albumin and increased brain 5-HIAA probably by inhibiting 5-HIAA efflux from brain. The other drugs did not alter brain 5-HT or 5-HIAA concentrations. 21 references. (Author abstract modified)

000089 Dafny, N.; Burks, T. F. Dept. of Neurobiology, Texas Medical Center, Houston, TX 77025 **5-HT and morphine interaction, effects on sensory input in caudate nucleus and substantia nigra.** Neuropharmacology (Oxford). 16(9):577-585, 1977.

The involvement of 5-hydroxy-tryptamine (5-HT) in morphine induced electrophysiological changes in the caudate nucleus and substantia nigra was examined in freely behaving rats. After tryptophan pretreatment, morphine induced in the substantia nigra the same responses in the caudate nucleus as morphine alone. Cinanserin pretreatment blocked morphine induced changes only in the substantia nigra, while parachlorophenylalanine (PCPA) had almost no effect in that site. In the caudate nucleus, the opposite phenomena were observed. An increase in morphine dosage overcame the PCPA effect on its action in both structures. These observations indicate that 5-HT plays an important role in morphine action. It can be assumed that the caudate nucleus and substantia nigra have different functional properties in relation to morphine action that could be complementary or compensatory. 36 references. (Journal abstract modified)

000090 Datta, R. K.; Ghosh, J. J. Department of Pathology, Beth Israel Medical Center, New York, NY 10003 **Mescaline-induced changes of brain-cortex ribosomes: mescaline demethylase activity of brain-cortex soluble supernatant.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 296(3):297-300, 1977.

To examine enzymic demethylation of mescaline in the brain cortex, a series of studies were undertaken on goat brain cortex slices incubated with mescaline. Brain cortex slices demethylate mescaline and p-methoxyacetaniiide, a reference O-demethylating substrate, though the rate of demethylation of mescaline is about one third that of the reference substrate. The demethylase activity is localized mostly in the soluble supernatant (10500xg). It is purified 47 fold with respect to the demethylation of mescaline by ammonium sulfate precipitation and DEAE cellulose chromatography. The partially purified demethylase, which is stable for 3 to 5 days at -5 degrees C in the presence of dithiothreitol and glutathione and is inhibited by p-chloromercuribenzoate, has maximal activity at pH between 7.2and 8.0. It demethylates mescaline into 3,4-dimethoxy-5-hydroxyphenethylamine and 3,5-dimethoxy-4-hydroxyphenethylamine and some unidentified derivatives. 11 references. (Author abstract)

000091 de Trujillo, G. C.; Scotti de Carolis, A.; Longo, V. G. Laboratori di Chimica Terapeutica, Istituto Superiore di Sanita, Rome, Italy **Influence of diazepam, L-DOPA and dopamine on the cerebellar and spinal electrical patterns induced by harmine in the rabbit.** Neuropharmacology (Oxford). 16(1):31-36, 1977.

The effects of harmine on the electrical activity of the cerebellum and spinal cord, and the influence of diazepam, L-DOPA, and dopamine on the behavioral and EEG changes induced by harmine were studied in adult rabbits of both sexes. All drugs were given i.v. Harmine caused tremors which began 1 to 2 min after injection and lasted up to 15 min. Harmine also caused high voltage spikes of 8 to 12 Hz lasting about 10 min in the cerebellar leads, synchronous waves in the spinal cord, and desynchronization in the cortex. By 30 min, EEG patterns had returned to normal. Diazepam given 5 min before or 3 to 4 min after harmine prevented the appearance of tremors; however, these animals showed ataxia and sedation. Diazepam had no effect on the harmine induced spiking in the cerebellar leads. L-DOPA 5 min or 30 min before or 3 to 4 min after harmine had no effect on the cerebellar spiking, but antagonized the harmine tremors. Dopamine had an antagonistic effect on the harmine induced tremors when administered at the peak effect of the alkaloid. However, dopamine given 5 to 10 min before harmine did not affect the harmine induced EEG alterations, nor did it prevent appearance of the tremors. 17 references.

000092 DeLuca, Donald C.; Angel, Charles; Murphree, Oddist D. Dept. of Biochemistry, Univ. of Arkansas for Medical Sciences, Little Rock AR **Effects of amphetamine and chlordiazepoxide on probenecid-induced accumulation of acidic metabolites in the cerebrospinal fluid of the dog.** Biological Psychiatry. 12(4):577-582, 1977.

Effects of amphetamine and chlordiazepoxide on probenecid induced accumulation of acidic metabolites in the cerebrospinal fluid of the dog were examined. Results indicate that amphetamine and chlordiazepoxide administration have similar effects on cyclic-3′5′-adenosine monophosphate (cAMP) accumulation in the cerebrospinal fluid of probenecid treated animals. The major difference between the effects of amphetamine and chlordiazepoxide is that the latter abolished the strain dependent difference in probencid induced cyclic-3′5′-guanosine monophosphate (cGMP) accumulation in cerebrospinal fluid while amphetamine did not alter this parameter. The ratio cAMP/cGMP, may reach values below 1.0at 3 hr after probenecid administration. These findings suggest that the cholinergic stimulation of guanylate cyclase produces a more rapid and quantitatively greater cyclic nucleotide contribution to the cerebrospinal fluid pool than is produced by adenylate cyclase activating systems such as noradrenergic and dopaminergic tracts. 13 references.

000093 Desaiah, D.; Ho, I. K. Department of Pharmacology and Toxicology, University of Mississippi Medical Center, Jackson, MS 39216 **Kinetics of catecholamine sensitive Na+-K+ ATPase activity in mouse brain synaptosomes.** Biochemical Pharmacology (Oxford). 26(21):2029-2035, 1977.

The effects of various neurotransmitters on ATPase activity, the kinetic properties and ion requirements of the catecholamine sensitive NA+-K+ ATPase (NKA) in mouse brain synaptosomes, and the interaction between dopamine (DA) sensitive ATPase and chlorpromazine, an antipsychotic drug, were studied. DA and norepinephrine (NE) activated NKA and Mg ATPase (MA) in a dose dependent manner. NKA was more sensitive than MA to the catecholamines. Acetylcholine, gamma-aminobutyric acid, L-glutamic acid and serotonin were without effect. Chlorpromazine totally inhibited the DA stimulated NKA and MA activities. NKA and MA were activated by DA and NE at different concentrations of ATP. NKA was activated noncompetitively to ATP, but MA exhibited a mixed type of activation in that Km decreased and Vmax increased in the presence of DAor NE. Maximum stimulation occurred at pH 7.5for NKA and 8.0for MA. DA and NE increased the NKA in the presence of Na+ and K+; however, in the absence of Na+, the K+ ATPase was stimulated by DA and NE, but in the absence of K+, the Na+ ATPase was not activated by DA or NE, indicating the ATPase activity was more sensitive to catecholamines in the presence of K+ than Na+. 24 references. (Author abstract modified)

000094 Di Chiara, Gaetano; Porceddu, Maria Louisa; Spano, Pier Franco; Gessa, Gian Luigi. Institute of Pharmacology, University of Cagliari, I-09100 Cagliari, Italy **Haloperidol increases and apomorphine decreases striatal dopamine metabolism after destruction of striatal dopamine-sensitive adenylate**

cyclase by kainic acid. Brain Research (Amsterdam). 130(2):374-382, 1977.

The respective effects of haloperidol, a potent and specific neuroleptic, and apomorphine, a dopamine (DA) receptor agonist, on striatal metabolism after destruction of striatal dopamine sensitive adenylate cyclase by kainic acid were examined in rats. It is pointed out that in order to distinguish in vivo between presynaptic and postsynaptic action of drugs a model is needed that eliminates postsynaptic DA receptors without destroying dopaminergic neurons; intrastriatal injection of kainic acid accomplishes this, producing a degeneration of striatal perikarya but leaving intact dominergic terminals and destroying DA sensitive adenylate cyclase. Using this model, it was found that haloperidol increases and apomorphine decreases DA metabolism estimated by measuring the levels of striatal 3,4-dihydroxyphenylacetic acid, the product of the metabolism through monoamine oxidase of released recaptured DA. 30 references. (Author abstract modified)

000095 di Francesco, C.; Bickel, M. H. Medizinisch-chemisches Institut, University of Berne, Buhlstrasse 28, CH-3012 Berne, Switzerland **Membrane lipids as intracellular binders of chlorpromazine and related drugs.** Chemico-Biological Interactions (Amsterdam). 16(3):335-346, 1977.

Membrane lipids as intracellular binders of chlorpromazine and related drugs were investigated and the binding sites of the molecular level were traced. Equilibrium dialysis studies on rats with chlorpromazine (CPZ) showed affinity and binding capacity values which are not significantly different with the following binders: rat liver microsomes, mitochondria, mitochondrial membranes, brain synaptosomes, myelin vesicles, and red blood cell membranes. There was no binding to cytosol or mitochondrial matrix. The same binding values as above were obtained with protein free liposomes of lipids extracted from microsomes, mitochondrial and red cell membranes and of pure egg lecithin. The results were confirmed by a UV spectroscopic method whereby the strongest binding signals were obtained with CPZ in the presence of fatty acids such as oleate. It is concluded that the major intracellular binders for CPZ and related drugs are the nonpolar moieties of membrane phospholipids, whereby hydrophobic interactions are mainly involved. 38 references. (Author abstract modified)

000096 Dill, R. E.; Costa, E. Dept of Microscopic Anatomy, Baylor College of Dentistry, Dallas, TX 75226 **Behavioural dissociation of the enkephalinergic systems of nucleus accumbens and nucleus caudatus.** Neuropharmacology (Oxford). 16(5):323-326, 1977.

The role of the enkephalin receptors in the nucleus accumbens and nucleus caudatus of rats in morphine analgesia and catalepsy was investigated. The intracranial bilateral injection of naltrexone (0.5mg) blocks analgesia and catalepsy elicited by morphine (15mg/kg) when the opiate antagonist is injected in the nucleus accumbens. The injection of naltrexone in the nucleus caudatus and globus pallidus failed to modify the analgesia and catalepsy. The injection of morphine (22.5mg) into the nucleus accumbens causes catalepsy and analgesia; the injection of the same dose of morphine into the nucleus caudatus is without any effect. 29 references. (Author abstract modified)

000097 Dinnendahl Volker; Gumulka, Stanislaw W. Institut fur Pharmakologie, Medizinische Hochschule Hannover, Karl-Wiechert-Allee 9, D-3000 Hannover 61, Germany **Stress-induced alterations of cyclicnucleotide levels in brain: effects of centrally acting drugs.** Psychopharmacology (Berlin). 52(3):243-249, 1977.

The effects of centrally acting drugs on stress induced alterations of cyclic nucleotide levels in brain were studied in mice. Acute stressing procedures caused a shortlasting increase in the levels of guanosie 3',5'-monophosphate (cGMP) in mouse brain without significantly influencing the concentrations of adenosine 3',5'monophosphate (cAMP). Animals were pretreated with various centrally acting drugs before being stressed in order to study the involvement of specific neurotransmitters in the stress induced rise of cGMP levels. Centrally depressant drugs affecting different synaptic mechanisms, such as chlorpromazine, reserpine, haloperidol, diazepam, and pentobarbital, inhibited the cGMP increase elicited by stress. Pretreatment with atropine, diphenhydramine, antazoline, cyproheptadine, phentolamine, bunitrolol, and indomethacin had no significant effect. Clonidine and both the (-)- and (+)-isomers of propranolol inhibited the stress induced cGMP increase in a dose related manner. The results suggest that norepinephrine, serotonin, acetylcholine, or prostaglandins are not involved in the elevation of cGMP levels elicited by acute stress. Participation of other neurotransmitter(s), such as dopamine or GABA, cannot be excluded. 36 references. (Author abstract modified)

000098 Domino, E. F.; Bartolini, A.; Kawamura, H. University of Michigan, Ann Arbor, MI 48109 **Effects of reticular stimulation, d-amphetamine and scopolamine on acetylcholine release from the hippocampus of brainstem transected cats.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 225(2):294-302, 1977.

The effects of intravenous and topical scopolamine and intervenous d-amphetamine on spontaneous release of acetylcholine (ACh) from the dorsal hippocampus of the cat were determined. Animals were prepared under halothane anesthesia with a brainstem transection and either intact or transected fornices. Subsequently, they were placed on room air. ACh was bioassayed using the leech muscle preparation. The amount of spontaneous ACh release varied markedly with each animal with a range of 10 to 21.5ng/sqcm/10 min. There was no mean difference in ACh release between midpontine pretrigeminal and midcollicular brainstem transections. Stimulation of the mesencephalic reticular formation with 300Hz every sec for 9 sec produced a 28% increase in ACh release from the hippocampus in midpontine pretigeminal brainstem transected preparations. After section of both fornices, spontaneous ACh release was not altered, although the increased release due to reticular formation simulation was prevented. d-Amphetamine, in doses of 2.5mg/kg given intravenously also produced an increase in ACh release from the hoppocampus in midpontine pretigeminal brainstem transected preparations. The d-amphetamine increase in ACh release from the hippocampus was also prevented when both fornices were cut. In contrast, scopolamine in doses of 0.75mg/kg increased ACh release in midpontine pretrigeminal brainstem transected cats, either with intact or cut fornices. Topical application of scopolamine to the hippocampus (with or without cut fornices) caused an increase in hippocampal ACh release. It was concluded that the spontaneous or evoked release of ACh from the cat hippocampus provides additional evidence for its role as a neurotransmitter. 17 references. (Author abstract modified)

000099 Domino, E. F.; Gahagan, S.; Adinoff, B.; Kovacic, B. Dept. of Pharmacology, Lafayette Clinic, Detroit, MI 48207 **Effects of various neuroleptics on rabbit hyperthermia induced by n,n-dimethyltryptamine (DMT) and d-amphetamine.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 226(1):30-47, 1977.

The effects of various neuroleptics were studied on NN-dimethyltryptamine (DMT) and d-amphetamine induced hyperthermia in the rabbit. Complete dose effect curves were obtained. For the five drugs, haloperidol, chlorpromazine, oxypertine, octoclothepin, and methiothepin, the order of potency for antagonism of amphetamine hyperthermia was the reverse of the order for antagonism of DMT hyperthermia. Methiothepin reduced d-amphetamine induced hyperthermia effectively at a very high dose and variably at lower doses. The results indicate that neuroleptics differ markedly in their specificity of antagonism of DMT and d-amphetamine which may act through different neurotransmitter mechanisms (tryptaminergic vs. adrenergic). 19 references. (Journal abstract)

000100 Dray, A.; Fowler, L. J.; Oakley, N. R.; Simmonds, M. A.; Tanner, T. Department of Pharmacology, School of Pharmacy, University of London, 29/39 Brunswick Square, London WC1N 1AX, England **Regulation of nigro-striatal dopaminergic neurotransmission in the rat.** Neuropharmacology (Oxford). 16(7/8):511-518, 1977.

The rat nigro-striatal dopaminergic system activity was studied after unilateral injections of ethanolamine O-sulphate (EOS) into the substantia nigra, zone reticulata, and after discrete electrolytic lesions in the same area. Twenty four hours after EOS pretreatment, gamma-aminobutyric acid transaminase (GABA-T) activity was significantly reduced and the GABA concentration significantly elevated in the ipsilateral substantia nigra. At that time, apomorphine and (+)-amphetamine injected intraperitoneally produced dose dependent turning of the rats toward the injected side. There was a close temporal relationship between the increase in GABA concentration in the substantia nigra (confined to the substantia nigra and persisting for up to 10 days) and apomorphine induced turning. No such behavioral changes were produced by EOS injected into the mesencephalic reticular formation or saline injections into the substantia nigra. After unilateral electrolytic lesions in the substantia nigra, similar doses of apomorphine and amphetamine produced turning toward the lesioned side, and the response could still be elicted 48 days after lesioning. The dopamine concentration was reduced and the homovanillic acid HVA) concentration was increased significantly in the ipsilateral striatum 24 hours after EOS pretreatment and 14 days after electrolytic lesioning. Both dopamine and HVA concentrations returned to control levels seven days after EOS pretreatment. There was a significant increase in the firing rate of spontaneously active zona compacta neurons in the ipsilateral substantia nigra 24 hours after EOS injection. It is concluded that the elevation of GABA concentration in the zona reticulata of the substantia nigra, or electrolytic lesions in this area, indirectly increased the activity of the ipsilateral nigro-striatal dopaminergic system. A tentative hypothesis is proposed to explain these observations. 45 references. (Author abstract modified)

000101 Dudar, J. D. Dept. of Physiology, Dalhousie University, Halifax, Nova Scotia B3H 4H7, Canada **The role of the septal nuclei in the release of acetylcholine from the rabbit cerebral cortex and dorsal hippocampus and the effect of atropine.** Brain Research (Amsterdam). 129(2):237-246, 1977.

To compare the effects of atropine on the cerebral cholinergic system with its effects on the hippocampal cholinergic system and to assess the contribution that the septum makes to this effect, acetylcholine (ACh) was collected from the alvear surface of the dorsal hippocampus and cerebral cortex in chloralose urethane anesthetized or unanesthetized rabbits. With anesthesia, the resting release of ACh from the hippocampus was greater than that from the cortex. Without anesthesia, the resting release from both areas was much higher and very similar. The addition of atropine sulphate to the collecting fluid or the administration of Artane increased resting ACh release from both the hippocampus and cortex to similar output levels. Atropine also increased ACh release due to stimulation of the medial septum (Ms) or mesencephalic reticular formation (MRF). Removal of the sseptum abolished the effect of atropine on resting ACh release and on release evoked by MRF stimulation from both the hippocampus and cortex. The data indicate that the septum is an essential pathway for cholinergic fibers ascending to the cerebral cortex and hippocampus, and that the septal cholinergic fibers must be intact and active for atropine to increase ACh release from their terminals. 24 references. (Author abstract)

000102 Eden, Staffan; Modigh, Kjell. Department of Physiology, University of Goteborg, Goteborg, Sweden **Effects of apomorphine and clonidine on rat plasma growth hormone after pretreatment with reserpine and electroconvulsive shocks.** Brain Research (Amsterdam). 129(2):379-384, 1977.

To further evaluate the role of catecholamines (CA) in the regulation of growth hormone (GH) secretion, the effect of reserpine alone and in combination with dopamine (DA) and noradrenaline (NA) agonists, and following pretreatment with repeated electroconvulsive shocks (ECS), was studied in rats. Both control rats and ECS pretreated rats showed normal episodic variation in GH secretion. Reserpine alone completely blocked GH secretion. Clonidine administered 4 h after reserpine induced only small and transient elevations of GH levels; apomorphine administered 4 h after reserpine had no significant effect on GH secretion. Concomitant treatment with apomorphine and clonidine following reserpine resulted in variable elevations of GH secretion. Pretreatment with repeated ECS potentiated the behavioral effects of clonidine plus apomorphine. Results suggest that GH secretion requires intact dopaminergic and noradrenergic neurotransmission, and that reserpine induced GH suppression is at least partially due to the drug's effect on catecholaminergic neurons. ECS potentiation of apomorphine plus clonidine suggests that ECS increases postsynaptic CA receptor sensitivity or alters neural responsiveness of related structures. 20 references.

000103 Eichelberger, Robert P., Jr. no address **Effects of dopamine on intracranial pressure.** Alabama Journal of Medical Sciences. 14(3):281, 1977.

In an investigation of the effects of dopamine on intracranial pressure, dopamine was shown to produce a dose related increase in intracranial pressure in control dogs, hypovolemic shocked dogs (both reinfused and nonreinfused), and dogs with intracranial mass lesions. Dogs with an intracranial mass lesion that were shocked and not reinfused showed decreases in intracranial pressure in doses of dopamine below 64mg/kg, while dogs that were given an intracranial mass, shocked, and then reinfused showed marked decreases in intracranial pressure when given dopamine in doses of less than 32mg/kg. It is concluded that changes in mean arterial pressure probably are the primary determinant in dopamine's effect on intracranial pressure. The main consequence of the cerebral arteriolar dilation produced by dopamine appears to be an impairment of cerebral autoregulation. (Author abstract modified)

000104 Feinberg, Michael P.; Cochin, Joseph. Dept. of Psychiatry, Univ. of Michigan School of Medicine, Ann Arbor, MI 48109 **Studies on tolerance. II. the effect of timing on**

inhibition of tolerance to morphine by cycloheximide. Journal of Pharmacology and Experimental Therapeutics. 203(2):332-339, 1977.

In an investigation of the effect of timing on inhibition of tolerance to morphine by cycloheximide (CX), male rats received weekly doses of 1mg/kg CX and 10mg/kg morphine sulfate (MS). Results indicate that the CX inhibited the development of tolerance, with the temporal relationship of the doses of CX and MS showing the most important correlation. CX given 24 hours before, 6 hours before, or 6 hours after weekly morphine injections did not affect the rate or the degree of tolerance development. The inhibition of tolerance seen after weekly administration of CX plus injections of morphine did not appear until several weeks after drug treatment was begun, and the difference between the morphine only and the morphine plus CX groups persisted for several weeks after drug treatment had been terminated. It is posited that while the inhibition of tolerance seen after CX does not result from any nonspecific debilitating effect of CX, it may be related to the ability of CX to suppress protein synthesis. The identity of the proteins involved or the method of involvement in the tolerance phenomenon remains unclear. 29 references. (Author abstract modified)

000105 Fennessy, M. R.; Taylor, D. A. Dept. of Pharmacology, University of Melbourne, Parkville, Victoria 3052, Australia **The effect of delta9-tetrahydrocannabinol on body temperature and brain amine concentrations in the rat at different ambient temperatures.** British Journal of Pharmacology (London). 60(1):65-71, 1977.

The effects of intravenous administration of levo-trans-delta9-tetrahydrocannabinol (delta9-THC) on behavior, body temperature, and brain concentrations of noradrenaline (NA), dopamine, 5-hydroxytryptamine (serotonin, 5-HT), and 5-hydroxyindoleacetic acid (5-HIAA) in rats at different ambient temperatures are investigated. The general behavioral effects produced by the drug was similar at all four ambient temperatures studied (4 degrees C, 21 degrees C, 31 degrees C, and 37 degrees C). At the lower two ambient temperatures, delta9-THC produced hypothermia, but at the higher two ambient temperatures the drug caused no changes in body temperature. Spectrophotofluorimetric determinations performed 1 h after drug administration revealed that delta9-THC: 1) increased whole brain 5-HT at 4 degrees C; 2) increased whole brain 5-HIAA and decreased whole brain NA at 21 degrees C; 3) increased whole brain 5-HIAA at 31 degrees C; and 4) increased whole brain 5-HT and 5-HIAA at 37 degrees C. It is posited that delta9-THC induced hypothermia is dependent on ambient temperature. It is suggested that although the apparent alteration in 5-HT metabolism at all temperatures may not be linked with the hypothermic respones, such a correlation cannot be excluded. 28 references. (Author abstract modified)

000106 Fernandes, M.; Kluwe, S.; Coper, H. Institute for Neuropsychopharmacology, Free University Berlin, Ulmenalee 30, D-1000 Berlin 19, Germany **The development of tolerance to morphine in the rat.** Psychopharmacology (Berlin). 54(2):197-201, 1977.

The development of tolerance to morphine in the rat was investigated and quantitative data were obtained by means of a shift of semilogarithmic dose/response curves. Tolerance to analgesia, catalepsy, and the tilted plane developed in a similar manner. The stimulating effects of 1mg/kg morphine-HCL were demonstrated in an open-field procedure in which it was found that they are less pronounced in chronically treated rats than in naive ones. No correlation between tolerance development and the acute ED50 of different tests was noted. 13 references. (Author abstract modified)

000107 Flemenbaum, Abraham. Department of Psychiatry, Texas Tech University School of Medicine, Lubbock, TX **Lithium inhibition of norepinephrine and dopamine receptors.** Biological Psychiatry. 12(4):563-572, 1977.

Sprague-Dawley rats (150 to 200g), serving as their own controls, were evaluated for hyperactivity and stereotyped behavior produced by chronic (1 week) i.p. administration of different doses of drugs that have differential norepinephrine and dopamine agonist properties. Drugs utilized were d-amphetamine and l-amphetamine, metamphetamine, cocaine, and the specific and direct dopamine receptor agonist apomorphine. This was followed by 1 week of rest after which all rats received 3 weeks of lithium chlorida (Li) subcutaneously. In the last week of Li administration each rat was also given the same drug administered previously at the same dose. In all cases, lithium decreased both hyperactivity and stereotyped behavior, suggesting lithium effects at both the presynaptic and postsynaptic neuron (receptor). 29 references. (Author abstract modified)

000108 Ford, D. H.; Rhines, R. K.; Levi, M. A. Department of Anatomy, SUNY Downstate Medical Center, 450 Clarkson Avenue, Brooklyn, NY 11203 **Strain differences in the response to morphine on incorporation of 3H-lysine into rat brain protein.** Acta Neurologica Scandinavica (Kobenhavn). 55(6):493-505, 1977.

To examine possible strain differences in morphine response, specific activity (SA) of lysine in the free amino acid (FAA), the cerebral cortical FAA, and the protein fractions, as well as specific accumulation and incorporation, was determined in male Sprague-Dawley (SD) and Wistar (W) rats. Lysine SA was higher in SD than in W rats in plasma, brain FAA fraction and protein fraction. In the SD strain, morphine decreased SA of plasma FAA significantly, but only slight effects were found in the W strain. Morphine elevated the SA of lysine in the cortical grey matter significantly in both strains, but with differing rates of decrease of SA. SA of lysine in cerebral cortical protein increased more rapidly in SD rats. Specific accumulation rates were also higher in SD rats. It is concluded that SD and W rats are not equivalent in relation to the accumulation of amino acids in the brain FAA pool from the plasma and that the effect of morphine on specific incorporation of lysine into brain protein is greater in Wistar rats. 19 references. (Author abstract modified)

000109 Friedman, E.; Gershon, S.; Hine, B.; Torrelio, Marina; Moss, Immanuela Rave. Dept. of Psychiatry, New York University School of Medicine, New York, NY 10015 **Cardiovascular effects of delta9-tetrahydrocannabinol in conscious and anesthetized dogs.** British Journal of Pharmacology (London). 59(4):561-563, 1977.

The effects of delta9-tetrahydrocannabinol (TCH) on heartrate and blood pressure in conscious dogs were compared to those in anesthetized dogs to determine whether the discrepant effects previously observed in humans and in anesthetized dogs are due to species difference or to the effects of the anesthetic. In conscious dogs, TCH produced a reduction in heartrate and no significant change in blood pressure. In anesthetized dogs, TCH reduced both heartrate and blood pressure. It is concluded that the bradycardia in dogs produced by THC is independent of the concomitant anesthesia and that the discrepancy between heartrate response to THC in dogs and in humans is due to a species difference. 11 references. (Author abstract modified)

000110 Fujimoto, Seigo. Department of Pharmacology, Nagoya City University Medical School, Kawasumi, Mizuho-ku, Nagoya 467, Japan **Relative influence of anaesthetics on depressor effects of intravenous prostaglandins E2 and A2.** Japanese Journal of Pharmacology (Kyoto). 27(3):473-475, 1977.

To determine the influences of certain anesthetics on depressor effects of intravenous (i.v.)prostaglandins E2 and A2 (PGE2 and PGA2), rats were anesthetized with i.p. injections of urethane, pentobarbital sodium, chloral hydrate, and alpha-chloralose and by oral administration of ethanol. In some experiments PGE2 and PGA2 were administered intracerebroventricularly (i.c.v.)in urethane, pentobarbital, and alpha-chloralose anesthetized rats. In some rats of the pentobarbital anesthetized group, both atropine sulfate and hexamethonium bromide were additionally injected through venous cannula. Thus, the relative potency of i.v. PGE2 to i.v. PGA2 as the vasodepressor agent was altered either by the anesthetics or their doses used. At the doses used, PGE2, when injected i.c.v.,increased blood pressure. The effect was central in origin since the same doses of PGE2 injected i.v. did not produce the same response. The effects of i.c.v. PGE2 and PGA2 were not altered by central depressants such as the anesthetics used. 8 references.

000111 Fuller, R. W.; Perry, K. W. Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, IN 46206 **Further studies on the effects of n-cyclopropyl p-chloroamphetamine in rat brain.** Neuropharmacology (Oxford). 16(7/8):495-497, 1977.

N-cyclopropyl-p-chloroamphetamine effects in rat brain were studied with regard to four questions: whether it lowers brain tryptophan hydroxylase, whether it requires active transport into serotonin neurones, whether blockade of its uptake into serotonin neurones would alter detectably the inhibition of monoamine oxidase in brain, and whether its effects on tryptophan hydroxylase and on monoamine oxidase can be dissociated. The drug lowered tryptophan hydroxylase levels in rat brain to less than half of control values at 6 and 24 hours, though at these times serotonin levels in brain were not lowered. The ultimate decline in brain serotonin levels measured at one week after the drug treatment was prevented by prior injection of fluoxetine suggesting that the experimental drug, like the parent drug p-chloroamphetamine, requires active uptake into serotonin neurones in order to deplete serotonin levels. Fluoxetine pretreatment did not alter inhibition of monoamine oxidase by the experimental drug as measured by activity with four substrates. This finding indicates that blockage of n-cyclopropyl-p-chloroamphetamine uptake into serotonin neurons does not alter in a quantitatively detectable way the inhibition of total brain monoamine oxidase by the drug. Fluoxetine pretreatment did prevent the lowering of tryptophan hydroxylase by N-cyclopropyl-p-chloroamphetamine at 6 hours, and serotonin levels were greatly increased in fluoxetine pretreated rats, since the drug effect on serotonin synthesis was eliminated whereas the effect on serotonin oxidation still occurred. Results support the idea that N-cyclopropyl-p-chloroamphetamine influences serotonin metabolism by multiple actions and that these actions can be dissociated to some extent. 9 references. (Author abstract modified)

000112 Fuller, Ray W.; Perry, Kenneth W. Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, IN 46206 **Lowering of epinephrine concentration in rat brain by 2,3-dichloro alpha-methyl-benzylamine, an inhibitor of norepinephrine N-methyltransferase.** Biochemical Pharmacology (Oxford). 26(21):2087-2090, 1977.

The effect of 2,3-dichloro-alpha-methylbenzylamine (DCMB), an inhibitor of norepinephrine N-methyltransferase, on brain epinephrine concentrations was studied in rats. In vitro, DCMB inhibited norepinephrine N-methyltransferase in a dose dependent manner. After injection of DCMB intraperitoneally, epinephrine was decreased in a brain section containing hypothalamus, thalamus, and subthalamus; the maximum decrease was at 4 hours. Neither norepinephrine nor dopamine concentration was significantly influenced. The amount of decrease in epinephrine was dependent on the dose of DCMB. The rate of decline in epinephrine suggests that epinephrine in brain turns over relatively rapidly at a rate comparable to the turnover of dopamine and norepinephrine. 8 references.

000113 Fuller, Ray W.; Snoddy, Harold D. Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, IN 46206 **Biphasic effects of m-chlorophenyl-piperazine in 3,4-dihydroxyphenylacetic acid concentration in rat brain.** Research Communications in Chemical Pathology and Pharmacology. 17(3):551-554, 1977.

The biphasic effects of m-chlorophenyl-piperazine on 3,4-dihydroxyphenylacetic acid (DOPAC) concentration in rat brain are discussed. It was found that m-chlorophenyl-piperazine dihydrochloride injected intraperitoneally into rats caused a rapid increase and a subsequent decrease in whole brain concentration of DOPAC, a metabolite of dopamine. The increase in DOPAC at 30 min and the decrease at 3 hrs were dose related and occurred after doses as low as 5mg/kg of m-chlorophenyl-piperazine dihydrochloride. 5 references. (Author abstract modified)

000114 Fuller, Ray W.; Wong, David T.; Snoddy, Harold D.; Bymaster, Frank P. Lilly Research Laboratories, Eli Lilly & Co., Indianapolis, IN 46206 **Comparison of the effects of 6-chloro-2-aminotetralin and of Org 6582, a related chloroamphetamine analog, on brain serotonin metabolism in rats.** Biochemical Pharmacology (Oxford). 26(14):1333-1337, 1977.

The effects of 6-chloro-2-aminotetralin and of Org 6582, a related p-chloroamphetamine analog, on brain serotonin metabolism were studied in rats. The 6-chloro-2-aminotetralin resembled p-chloroamphetamine in lowering brain levels of tryptophan hydroxylase, serotonin, and 5-hydroxyindoleacetic acid (5-HIAA) in rat brain, though its effects were less than those of p-chloroamphetamine and were short lasting in contrast to the permanent neurotoxic effects of p-chloroamphetamine. Org 6582 did not lower tryptophan hydroxylase or serotonin levels in rat brain; its lowering of 5-HIAA levels can be attributed to its inhibition of serotonin reuptake. In vitro, Org 6582 was a slightly stronger inhibitor of serotonin uptake than was 6-chloro-2-aminotetralin, but a distinctly weaker inhibitor of monoamine oxidase. Org 6582 but not 6-chloro-2-aminotetralin was a potent inhibitor of uptake into serotonin neurons in vivo. 23 references. (Author abstract modified)

000115 Gabay, Sabit; Achee, Frances M. Biochemical Research Laboratory, Veterans Administration Hospital, Brockton, MA **Psychoactive drug effects and substrate-specificity in intact mitochondrial monoamine oxidase from brain.** Psychopharmacology Bulletin. 13(1):45-46, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, studies on substrate specificity and kinetics of intact mitochondrial monoamine oxidase

(MAO) from bovine brain are presented. Enzyme characteristics such as optimal pH for deamination of the substrate as well as inhibition by anions followed a pattern apparently based on the structural similarities of the substrates (i.e. phenylethylamine vs indoleamine). Approximations of the percent of un-ionized amines present at the various pHs tested resulted in data consistent with the idea that the true substrates of MAO are the un-ionized amines and it is suggested that the lipid molecules in the mitochondrial membrane could play a role in the functioning of MAO towards various substrates. The inhibition of MAO in bovine brain by clorgyline and harmaline produced the expected patterns of selectivity with the inhibition of 5-HT deamination being greater than that of phenylethylamine. However, very little differentiation between substrates was noted with deprenyl and pargyline, indicating that the proposed two forms of MAO based on inhibitor sensitivities and substrate specificities does not represent a rigid classification. It is suggested that variability in lipid composition surrounding MAO in mitochondria from different tissue sources may account for the many differences in enzyme properties reported.

000116 Gallagher, Brian M.; Fowler, Joanna S.; MacGregor, Robert R.; Wolf, Alfred P. Chemistry Department, Brookhaven National Laboratory, Upton, NY 11973 **Evaluation of radiorespirometry for the determination of monoamine oxidase activity in vivo utilizing (11C)octylamine as a substrate.** Biochemical Pharmacology (Oxford). 26(20):1917-1922, 1977.

Respirometry was evaluated for the determination of monoamine oxidase (MAO) activity in vivo in mice utilizing 11C-octylamine (OA) as a substrate. In pargyline pretreated mice, the rate of decline in tissue levels of OA after intravenous administration was decreased to an extent that varied with the particular tissue and the time after pargyline pretreatment. Pargyline treated mice showed a reduced excretion of 11C-carbon dioxide (CO2) after OA administration but not after octanoic acid(1-11C) or octanol(1-11C) injection. The duration of inhibition of CO2 excretion after pargyline paralleled reasonably well the inhibition of MAO measured directly in intestine and liver, but the inhibition of MAO in lung, kidney, and brain persisted longer. Direct measurement of mitochondrial MAO using OA showing the following: intestine greater than liver greater than lung greater than brain much greater than kidney. At 94 hr after pargyline, CO2 excretion was close to the control value, yet the MAO activity of brain, lung, and kidney was less than half of the control value. The results indicate that the rate determining step in the overall rate of CO2 excretion is not the MAO catalyzed step, but the reactions occurring after deamination. 26 references. (Author abstract modified)

000117 Ganellin, C. Robin. Research Institute, Smith Kline and French Laboratories Limited, Welwyn Garden City, Hertfordshire, England **Relative concentrations of zwitterionic and uncharged species in catecholamines and the effect of N-substituents.** Journal of Medicinal Chemistry. 20(4):579-581, 1977.

The relative concentrations of zwitterionic and uncharged species for the series of N-substituted catecholamines (I, R sub 1 equals OH; R equals H, Me, Et, i-Pr, t-Bu) were derived from the PK sub a data published in 1972 by Sinistri and Villa. The concentration ratios, represented by the tautomeric equilibrium constant K sub t, show a definite trend and are respectively 1,8, 4.3, 4.7, and 7.1. These values suggested that any mechanism of action involving proton transfer, which might transform the zwitterion into the uncharged form, would be most favorable for norepinephrine and least favorable for the t-Bu derivative. Continued research on the features of catecholamine chemistry attributable to the N-alkyl groups is urged. 7 references. (Author abstract modified)

000118 Gerber, N.; Leger, R. M.; Gordon, P.; Smith, R. G.; Bauer, J.; Lynn, R. K. Department of Pharmacology, Medical School, University of Oregon Health Sciences Center, Portland, OR 97201 **The metabolism of d-, l- and dl-methadone in the isolated perfused rat liver.** Journal of Pharmacology and Experimental Therapeutics. 200(3):487-495, 1977.

To examine the disposition of dl-methadone in the isolated perfused rat liver and to investigate whether there is a major difference in the metabolic rate of the isomers in this system, 5mg doses of d-methadone, l-methadone or dl-methadone were added to the liver and the disposition of each compound was monitored over 120 min. Results indicated that: 1) the concentration of each drug in the perfusate initially declined in the first 10 min after which the decline rate decreased; 2) the mean hepatic extraction from the perfusate at 10 min was 72, 66, and 69% respectively for d-methadone, l-methadone, and dl-methadone; 3) concentration of the d-isomer at each sampling was lower than that of the isomer; 4) the initial rapid decline in the perfusate was caused primarily by uptake of the unchanged drug into the liver, and the decline thereafter was paralleled by an increase in the concentration of the primary mono-N-demethylated metabolite; 5) smaller quantities of more polar metabolites were also present in liver and bile; 6) addition of SKF 525-A retarded the decline from perfusate and pretreatment with phenobarbital increased the rate of biotransformation of methadone in the isolated perfused liver. 26 references. (Author abstract modified)

000119 Ghosh, J. J.; Mitra, G.; Poddar, M. K.; Chatterjee, D. K. Department of Biochemistry, University College of Science, 35 Ballygunge Circular Rd., Calcutta 700 019, India **Effect of delta9-tetrahydrocannabinol administration on hepatic functions.** Biochemical Pharmacology (Oxford). 26(19):1797-1801, 1977.

The effects of single and chronic i.p. administration of delta9-tetrahydrocannabinol (THC) on hepatic functions of rat were studied at cellular and subcellular levels. After chronic administration, (1) protein, RNA, phospholipid, cholesterol contents of liver microsomal fraction and microsomal Gl-6-Pase and Mg plus 2-ATPase activities increased significantly, (2) microsomal lipid peroxidation value decreased, and (3) GOT and GPT activities of liver and serum and hepatic triglyceride contents remained unchanged. Most of the parameters studied were unaffected after single administration of the drug excepting a decrease in microsomal lipid peroxidation and increase Mg plus 2-ATPase activity. No apparent harmful effect of the drug on hepatic functions is obvious from the present study. 32 references. (Author abstract)

000120 Gianutsos, Gerald; Moore, Kenneth E. Department of Pharmacology, Michigan State University, East Lansing, MI 48824 **Possible significance of clozapine-induced increase in brain dopamine.** Research Communications in Chemical Pathology and Pharmacology. 17(1):29-39, 1977.

The effect of clozapine on the dopamine content of the mouse brain was investigated in an effort to trace the selective action of the antipsychotic drug. It was found that clozapine elevates the concentration of dopamine in the brains of mice injected with doses of 5-20mg/kg while a 40mg/kg dose has no effect. This biphasic change in dopamine content is seen in both the striatum and olfactory tubercle. The elevated dopamine concentration is dose dependently antagonized by

apomorphine, while a corresponding clozapine induced reduction in norepinephrine concentrations is unaffected by apomorphine. These results suggest that part of the action of clozapine may be to reduce the release of dopamine. 24 references. (Author abstract modified)

000121 Gianutsos, Gerald; Moore, Kenneth E. Department of Pharmacology, Michigan State University, East Lansing, MI 48824 **Increase in mouse brain dopamine content by baclofen: effects of apomorphine and neuroleptics.** Psychopharmacology (Berlin). 52(3):217-221, 1977.

The effects of apomorphine (APO) and neuroleptics on the increase in mouse brain dopamine content caused by baclofen (BAC) were studied. BAC, like gamma-butyrolactone, caused a dose dependent increase in the concentration of dopamine in mouse brain without affecting the content of norepinephrine. APO antagonized the BAC induced increase. Haloperidol but not pinozide counteracted the effect of APO and dose dependently enhanced the increase in brain dopamine produced by BAC. The results suggest that BAC reduces impulse flow in dopaminergic neurons in a manner similar to that produced by gamma-butyrolactone. 18 references. (Author abstract modified)

000122 Gibbs, Marie E.; Ng, Kim T. Department of Psychology, La Trobe University, Bundoora, Victoria, 3083, Australia **Counteractive effects of norepinephrine and amphetamine on ouabain-induced amnesia.** Pharmacology Biochemistry and Behavior. 6(5):533-537, 1977.

The mechanism by which norepinephrine (NE) and amphetamine inhibit amnesia induced by administration of ouabain prior to learning of a single trial passive avoidance task when administred immediately after learning was investigated in chickens. Both drugs counteracted ouabain induced amnesia, which results from the inhibition of memory formation during the labile sodium pump dependent phase, but did not overcome potassium chloride induced amnesia, which results from inhibition of memory formation in the short-term phase prior to formation of labile sodim pump dependent memory. The actions of amphetamine and NE on ouabain induced amnesia paralleled that of diphenylhydantoin (DPH), and occurred within similar time constraints. It is concluded that, like DPH, NE and amphetamine (through release of NE) exert their effects through stimulation of sodium/potassium adenosine triphosphatase activity. 18 references.

000123 Gilbert, J. C.; Pertwee, R. G.; Wyllie, M. G. Pharmacology Section, Dept. of Pharmacy, Herio-Watt University, Edinburgh EH1 2HG, Scotland **Effects of delta9-tetrahydrocannabinol and cannabidiol on a Mg2+-ATPase of synaptic vesicles prepared from rat cerebral cortex.** British Journal of Pharmacology (London). 59(4):599-601, 1977.

Synaptic vesicles from male rat cerebral cortex were treated with delta9-tetrahydrocannabinol (TCH) and cannabidiol to investigate their effect on the activity of vesicular magnesium dependent adenosine triphosphatase (Mg-ATPase). THC and cannabidiol both exhibited a concentration related inhibition of Mg-ATPase. Cannabidiol was about three times more potent than TCH. At a subinhibitory concentration, THC increased the activity of Mg-ATPase relative to values obtained with vehicle controls. The inhibitory effects of these drugs are similar to those obtained previously using drugs with well established anticonvulsant activity, and both THC and cannabidiol have been found to have anticonvulsant activity in rats and mice. It is posited that these results support the concept that the capacity to inhibit vesicular Mg-ATPase is a characteristic property of anticonvulsant drugs. 8 references. (Author abstract modified)

000124 Giorguieff, M. F.; Le Floc'h, M. L.; Glowinski, J.; Besson, M. J. Group NB, College de France, 11 Place N. Berthelot, Paris 75005, France **Involvement of cholinergic presynaptic receptors of nicotinic and muscarinic types in the control of the spontaneous release of dopamine from striatal dopaminergic terminals in the rat.** Journal of Pharmacology and Experimental Therapeutics. 200(3):535-544, 1977.

To further characterize the mechanisms involved in the acetylcholine (ACh) effects on the spontaneous release of 3H-dopamine (3H-DA) during the continuous superfusion of rat striatal slices with L-3,5-3H-tyrosine were studied. The effects of ACh were specifically examined in the absence of calcium, in the presence of tetrodotoxin and in the presence of nicotinic and muscarinic blockers. They were also compared with those induced by oxotremorine, a muscarinic agonist. Results indicated that: 1) spontaneous release of 3H-DA was reduced by about 50% when slices were superfused with a calcium free medium containing ethylene glycol bis (beta-aminoethyl ether)-N,N'-tetraacetic acid or with one containing tetrodotoxin, and these effects were not related to a change in 3H-DA synthesis; 2) ACh stimulated release of 3H-DA about 100% but the effect was abolished in the absence of calcium and partially blocked by pempidine, atropine, or scopolamine; 3) oxotremorine enhanced 3H-DA release to a lesser extent than ACh; 4) the ACh effect was significantly reduced by pempidine in the presence of neurotoxin, and the effect of oxotremorine was blocked by atropine. Results suggested the presence of cholinergic presynaptic receptors of the nicotinic and muscarinic types on striatal dopaminergic terminals. 22 references. (Author abstract modified)

000125 Giuditta, A.; Moore, B. W.; Prozzo, Nicola. International Institute of Genetics and Biophysics and the Zoological Station, Naples, Italy **A brain-specific protein from Octopus Vulgaris, lam.** Journal of Neurochemistry (Oxford). 29(2):235-244, 1977.

Several major brain specific proteins were investigated in cephalopods by electrophoretic analysis of the soluble proteins extracted from the optic lobes and other organs of octopus and by 2 dimensional fractionation of the soluble proteins from optic lobes and hepatopancreases of octopus and squid. One of the brain specific proteins from octopus, identified as 0-1 was purified by chromatography on DEAE cellulose, Sephadex G-150 and DEAE-Sephadex. The protein appears to be pure. Amino acid analysis indicates a high content of glutamic and aspartic acids or their amides (or both) and the lack of tryptophan. A molecular weight of 17,000 has been calculated from sodium dodecyl sulphate-gel electrophoresis, gel filtration and ultracentrifugation analysis. The preparation of a specific rabbit antiserum against 0-1 has allowed its determination by agar immunodiffusion and complement fixation techniques. With the latter procedure it has shown that the protein is absent outside the nervous system, is present in a concentration of several mg/g wet weight in octopus brain, is widely distributed within the octopus central and peripheral nervous system and in several molluscan species, and is present in optic lobes of octopus at early stages of development. 19 references. (Author abstract)

000126 Goodlet, I.; Mireylees, S. E.; Sugrue, M. F. Department of Pharmacology, Organon Laboratories Ltd., Newhouse, Lanarkshire ML1 5SH, England **Effects of mianserin, a new antidepressant, on the in vitro and in vivo uptake**

of monoamines. British Journal of Pharmacology (London). 61(2):307-313, 1977.

The effects of mianserin and of selected tricyclic antidepressants in vivo and in vitro in rats and rattits were compared in a number of monoamine uptake models. The ability of mianserin to block the noradrenergic neurone membrane amine pump of rabbit brainstem slices was comparable to that of imipramine and amitriptyline and less than that of desipramine and nortriptyline. Both mianserin and desipramine were competitive inhibitors of noradrenaline uptake in vitro. The effect of mianserin on noradrenaline uptake in vivo was studied both peripherally and centrally. The ability of 6-hydroxydopamine to lower rat heart noradrenaline levels was found to be very sensitive to inhibition by tricyclic antidepressants. Mianserin was active in this model. However, its ability to block the 6-hydroxydopamine induced fall in rat heart noradrenaline concentration was appreciably less than than of the tricyclics studied. Mianserin, like tricyclic antidepressants, was essentially devoid of effect on dopamine uptake both in vitro and in vivo. The ability of mianserin to inhibit (3H)-5-hydroxytryptamine uptake by rat hypothalamic synaptosomes was appreciably less than that of the tricyclic antidepressants studied. Mianserin was essentially devoid of effect on rat brain 5-hydroxytryptamine uptake in vivo. It is concluded that in certain situations large doses of mianserin may block noradrenaline uptake in vivo. However, in no way does mianserin rival tricyclic antidepressants in blocking monoamine uptake in vivo. The clinical efficacy of mianserin cannot be attributed to inhibition of monoamine uptake. 35 references. (Author abstract)

000127 Green, A. R.; Mitchell, B. D.; Tordoff, Ann F. C.; Youdim, M. B. H. MRC Unit and University Department of Clinical Pharmacology, Radcliffe Infirmary, Oxford OX2 6HE, England **Evidence for dopamine deamination by both type A and type B monoamine oxidase in rat brain in vivo and for the degree of inhibition of enzyme necessary for increased functional activity of dopamine and 5-hydroxytryptamine.** British Journal of Pharmacology (London). 60(3):343-349, 1977.

In a study of dopamine (DA) deamination by type A and type B monoamine oxidase (MAO) in rat brain in vivo, and of the degree of inhibition of enzyme necessary for increased functional activity of DA and 5-hydroxytryptamine (5-HT), tranylcypromine administration totally inhibited brain MAO oxidation of 5-HT, phenylethylamine and DA as measured in vitro. When L-3,4-dihydroxyphenylalanine (L-DOPA) was given 30 min after the tranylcypromine, brain DA and noradrenaline concentrations rose markedly and the rats displayed characteristic behavioral changes and locomotor activity. Clorgyline administration inhibited 5-HT oxidation by almost 100% but phenylethylamine by only 29% while (--)-deprenil injection almost totally inhibited phenylethylamine oxidation and inhibited 5-HT metabolism by only 31%. Administration of clorgyline plus (--)-deprenil almost totally inhibited oxidation of both phenylethylamine and 5-HT; there was a large rise of brain dopamine and noradrenaline concentrations and the animals displayed the behavioral changes observed when tranylcypromine and L-DOPA had been given. It is concluded from both the studies with clorgyline and deprenil and the recovery of MAO activity after tranylcypromine, that dopamine is metabolized by both Type A and Type B MAO in vivo and that it is only when both forms are almost totally inhibited that there is an increase in dopamine and 5-HT functional activity, as judged by the appearance of the hyperactivity syndromes. 16 references. (Author abstract mofieid)

000128 Green, J. P.; Maayani, S. Department of Pharmacology, Mount Sinai School of Medicine of the City University of New York, New York, NY 10029 **Tricyclic antidepressant drugs block histamine H2 receptor in brain.** Nature (London). No. 5624:163-165, 1977.

To determine whether tricyclic antidepressant drugs block histamine H2 receptor in the brain, four tricyclic antidepressants representing four different structural types were tested on the H2 receptor linked to adenylate cyclase in homogenates of the guinea-pig hippocampus and cortex. Results indicate that all four tricyclic antidepressants shifted the dose response curve of histamine and dimaprit stimulated adenylate cyclase in a parallel manner. Additionally, it is reported that amitriptyline is the most active drug, about as potent as cyproheptadine, while dibenzepin and iprindole have one hundred fold less affinity for the cyclase. It is concluded that while the information available cannot support an assertion that blockage of the H2 receptor contributes to the therapeutic affect of these drugs, some of the pharmacological effects of the antidepressant drugs may rest on blockage of H2 receptors. 30 references.

000129 Groves, Philip M. Dept. of Psychology, University of Colorado, Boulder, CO **Dopaminergic mechanisms involved in the acute and chronic effect of amphetamine.** Psychopharmacology Bulletin. 13(1):44-45, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, a study in which amphetamine or haloperidol was infused directly into the neostriatum of substantia nigra of rats and single or multiple neuronal firing rates were recorded in these areas in an effort to clarify alterations in dopaminergic neruonal activity and alterations in neuronal firing in the neostriatum is reported. Amphetamine produced a marked depression of neuronal firing in the neostriatum, while firing in the substantia nigra was simultaneously accelerated. In several animals, following haloperidol infusion into the neostriatum, the simultaneous inhibition of neuronal activity in the substantia nigra could be blocked by systemically administered scopolamine. Haloperidol infused directly into the substantia nigra pars compacta increased neuronal firing. The results are regarded as consistent with the view that amphetamine and haloperidol act by producing self-inhibition by dopaminergic neurons, i.ealterations in the release of dopamine (DA) from dendrites of DA neurons or blockade of access of DA released from DA dendrites to receptors on these neurons.

000130 Grunnet, Margaret L. Dept. of Neurology, 3E 512 Medical Center, University of Utah College of Medicine, Salt Lake City, UT 84132 **The effects of nortriptyline and mesoridazine on neurons and glia in vitro.** Journal of Neuropathology and Experimental Neurology. 36(5):835-841, 1977.

The ultrastructural changes produced by the tricyclic antidepressant nortriptyline and the phenothiazine mesoridazine in mouse neurons and glia in vitro are reported. Nortriptyline (0.05mg to 0.2mg) or mesoridazine (0.05mg to 0.2mg) were injected in newborn mouse brain in vitro for 1 to 3 weeks. Concentrically laminated bodies (CLB) and increased numbers of dense bodies were produced by exposure to these drugs. Additionally, the number and complexity of the CLB increased with increased dose and longer time in vitro, and their formation appeared to be reversible. Results indicate that nortriptyline and mesoridazine can produce an experimental lipidosis in neurons and glia in vitro, and that the number and complexity of CLB and dense bodies are dose and time related. 17 references. (Author abstract modified)

000131 Gudelsky, Gary A.; Moore, Kenneth E. Department of Pharmacology, Michigan State University, East Lansing, MI 48824 **A comparison of the effects of haloperidol on dopamine turnover in the striatum, olfactory tubercle and median eminence.** Journal of Pharmacology and Experimental Therapeutics. 202(1):149-156, 1977.

A sensitive radioenzymatic procedure was used to quantify the effects of haloperidol on dopamine concentrations and rates of turnover in rat striatum, olfactory tubercle and median eminence, regions containing terminals of nigrostriatal, mesolimbic and tuberoinfundibular neurons, respectively. Haloperdiol did not alter the steady-state concentrations of dopamine in any of these brain regions at any time. Haloperidol increased dopamine turnover in the striatum and olfactory tubercle 2 and 8 hours after administration. The rate of dopamine turnover was increased only in the median eminence 16 and 24 hours after the administration of haloperidol, and effect which was blocked by hypophysectomy. Two other antipsychotic agents, clozapine and thioridazine, also increased dopamine turnover in the median eminence 16 hours after the first of two injections. These results provide evidence for the existence of hormonal/neuronal feedback modulations of tuberoinfundibular dopaminergic neurons in contrast to the neuronal feedback modulation of nigrostriatal and mesolimbic neurons. 41 references. (Author abstract)

000132 Guidotti, A.; Gale, K.; Tofano, G.; Costa, E. Laboratory of Preclinical Pharmacology, NIMH, St. Elizabeths Hospital, Washington, DC 20032 **Regulatory role of GABA neurons on the activation of striatal tyrosine hydroxylase by haloperidol. (Unpublished paper).** Washington, DC, NIMH, 1977. 24 p.

It is proposed that the affinity of striatal tyrosine hydroxylase can be changed by antipsychotics via inhibition of GABA receptor function, however, additional mechanisms (e.g. facilitation of Substance P receptor function) may also operate. The primary site of action of antipsychotics is a blockade of DA receptors. The question then arises whether DA autoreceptors, postsynaptic receptors, or DA receptors in reciprocal synapses are involved. Evidence does not support the existence of DA autoreceptors, but instead is consistent with the existence of nigra axodendritic reciprocal dopaminergic synapses. Axodendritic DA reciprocal synapses may also function in striatum. Emphasizing the possible involvement of reciprocal DA synapses in the action of antipsychotics suggest that these drugs act on local neuronal circuits which, unlike long projection axons, transmit information without generating spikes. 48 references. (Author abstract)

000133 Guidotti, A.; Toffano, G.; Grandison, L.; Costa, E. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeth's Hospital, Washington, DC 20032 **Second messenger responses and regulation of high affinity receptor binding to study pharmacological modification of GABAergic transmission. (Unpublished paper).** Washington, DC, NIMH, 1977. 14 p.

A series of studies of gamma-amino-butyric acid (GABA) receptor pharmacology was undertaken in which GABA high affinity binding studies were coupled with a second messenger response (e.g. 3',5'-cyclic guanosine monophosphate, cGMP, content in rat cerebellar cortex, or 3',5'-cyclic adenosine monophosphate, cAMP in anterior pituitary) as an index of the specific output changes which are triggered in postsynaptic cells by activation of postsynaptic GABA receptors. Results of studies with reserpine, isoniazid, picrotoxin, pargyline, diazepam, muscimol, haloperidol, morphine, flunitrazepam, naltrexone, clonazepam and bicuculline using this methodology are reported; and different mechanisms whereby muscimol and diazepam influence GABAergic transmission are suggested. 38 references.

000134 Guyenet, Patrice; Euvrard, Catherine; Javoy, France; Herbet, Alain; Glowinski, Jacques. School of Medicine, Department of Psychiatry, 34 Park Street, New Haven, CT 06519 **Regional differences in the sensitivity of cholinergic neurons to dopaminergic drugs and quipazine in the rat striatum.** Brain Research (Amsterdam). 136(3):487-500, 1977.

The topographical distribution of cholinergic innervation was compared with the distribution of dopaminergic and serotoninergic terminals within rat striatum. Marked differences occurred in choline acetylase (ChAc) activity in various striatum areas, with the richest innervation in the centrolateral part. A similar distribution occurred by measuring acetylcholine (ACh) levels in punches taken from frozen frontal serial slices. The regional cholinergic innervation differed markedly from that of aminergic terminals as revealed by topographical distributions of ChAc activity, ACh, 5-HT, and DA. Apomorphine and haloperidol increased and decreased Ach levels respectively and induced similar effects in various striatal areas. Quipazine, a drug acting on 5-HT uptake and release and on serotoninergic receptors, selectively increased ACh levels and changes correlated with regional 5-HT distribution, but not with that of DA. It was concluded that a limited population of striatal cholinergic neurons is under inhibitory control of serotoninergic neurons and that some striatal cholinergic neurons influenced by dopaminergic neurons are not controlled by serotoninergic neurons. 47 references. (Author abstract modified)

000135 Haas, H. L.; Ryall, R. W. Neurochirurgische Universitatsklinik, Zurich, Switzerland **An excitatory action of iontophoretically administered lithium on mammalian central neurones.** British Journal of Pharmacology (London). 60(2):185-195, 1977.

The action of iontophoretically administered lithium (Li) was studied on spinal Renshaw cells and interneurons in cerebral cortex, thalamus, hypothalamus, and brainstem of cats and rats to test the hypothesis that Li might reduce acetylcholine (ACh) synthesis, thereby impairing cholinergic transmission. There was a correlation between the effects of Li and those of ACh, although more cells were unaffected by Li than by ACh. The usual Li effect was an excitation of rather slow onset, but occasionally effects were produced with time courses similar to those of ACh. The excitation was blocked by ACh antagonists and was best demonstrated with dihydro-beta-erythroidine on Renshaw cells. Li reduced the postsynaptic excitant action of ACh on Renwhaw cells. Depressant actions of Li were encountered on cells also depressed by ACh. It was concluded that Li may facilitate cholinergic transmission at some site in the central nervous system by increasing the release of ACh by an unknown mechanism. Since facilitation of neuronal firing with Li was usually observed, the depressant effects on postsynaptic responses to ACh may be of little consequence. 23 references. (Author abstract modified)

000136 Hall, Zach, W.; Reiness, C. Gary. Department of Neurobiology, Harvard Medical School, Boston, MA 02115 **Electrical stimulation of denervated muscles reduces incorporation of methionine into the ACh receptor.** Nature (London). 268(5621):655-657, 1977.

To determine the effects of activity on the rate of receptor synthesis or its insertion into subsynaptic muscle membrane,

denervated muscles of Sprague-Dawley rats were electrically stimulated and the incorporation of 35 S-methionine into the ACh receptor was determined. Results indicated that electrical stimulation of denervated muscles reduces incorporation of 35 S-methionine into ACh receptors. It is argued that these results indicate that changes in incorporation of 35 S-methionine into ACh receptor, parallel changes in overall density and suggest extrajunctional receptor levels are controlled by regulation either of synthesis or of some other step before appearance of the receptor in the external membrane.

000137 Han, Wesley W.; Yakatan, Gerald J.; Maness, Dale D. Searle Laboratories, Chicago, IL 60680 **Kinetics and mechanisms of hydrolysis of 1,4-Benzodiazepines III: nitrazepam.** Journal of Pharmaceutical Sciences. 66(6):795-798, 1977.

The kinetics and mechanisms of the hydrolysis of the 7-nitro analog, nitrazepam, are examined. It is reported that the hydrolysis of nitrazepam involves a two step sequential mechanism. The intermediate is the ring opened compound resulting from scission of the azomethine bond. The final products are glycine and 2-amino-5-nitrobenzophenone. Recyclization of the intermediate to nitrazepam occurs at pH values above the pKa of the intermediate, in the pH region where the amino group of the intermediate is not protonated. As opposed to chlordiazepoxide and oxazepam, the initial hydrolysis step occurs at the 4,5-bond, not at the 1,2-amide linkage. This difference is attributed to a preferential activation for hydrolysis of the azomethine linkage by the nitro group. The hydrolysis involves an uncatalyzed reaction, specific acid-base catalysis, and general acid base catalysis for acetate and phosphate buffers. 9 references. (Author abstract modified)

000138 Harper, Barbara; Hughes, I. E. Dept. of Pharmacology, The Medical School, Thoresby Place, Leeds LS2 9NL, Yorkshire, England **A comparison in rabbit isolated hearts of the dysrhythmogenic potential of amitriptyline, maprotiline and mianserin in relation to their ability to block noradrenaline uptake.** British Journal of Pharmacology (London). 59(4):651-660, 1977.

Isolated rabbit hearts were perfused with amitriptyline, maprotiline, and mianserin to assess the relative cardiotoxicity of these drugs with reference to their ability to inhibit noradrenaline (NA) uptake and to predispose to NA induced dysrhythmias. Low concentrations of NA alone produced chronotropic and inotropic responses and a shortening of the interval between peak atrial and peak ventricular tensions (the A-V contraction interval). Higher concentrations of NA alone produced extrasystoles in two of seven hearts. Perfusion with low concentrations of amitriptyline or maprotiline reduced ventricular force and did not change heartrate. Only amitriptyline reduced atrial force and lengthened the A-V contraction interval. At this low concentration, mianserin produced only a marginal shortening of the A-V contraction interval. At higher concentrations, all three drugs produced dysrhythmias indicative of an interference with atrioventricular synchronization; however, the concentration of mianserin required to produce this effect was almost eight times that of the other drugs. In the presence of low concentrations of mianserin, perfusion with NA shortened the A-V contraction time but did not produce dyshrhythmias. In the presence of low concentrations of amitriptyline or maprotiline or considerably higher concentrations of mianserin, the A-V contraction interval was lengthened and dysrhythmias characteristic of interference with atrioventricular synchronization developed. The three drugs inhibited uptake of radiolabeled NA in perfused rabbit hearts and in mouse isolated atria or vasa differentia to a similar extent. It is concluded that mianserin is the least cardiotoxic of these drugs in this preparation and that the ability of these drugs to predispose to NA induced dysrhythmias is not related to the blockade of NA uptake. 23 references. (Author abstract modified)

000139 Hattendorf, Ch.; Hattendorf, M.; Coper, H.; Fernandes, M. Institute of Neuropsychopharmacology, Ulmenallee 30, D-1000 Berlin 19, Germany **Interaction between delta9-tetrahydrocannabinol and d-amphetamine.** Psychopharmacology (Berlin). 54(2):177-182, 1977.

Evidence is presented that d-amphetamine increases the motor activity of rats at a dose range of 0.5to 4mg/kg and that delta9-tetrahydrocannabinol (THC) diminishes this effect in a dose dependent manner. Hyperthermia caused by 5mg/kg amphetamine was antagonized by THC, whereas amphetamine induced stereotypic movements. THC and d-amphetamine both reduced food (anorexic effects) and water intake and normal development of bodyweight and had an additive effect in combination. Ss treated with 5mg/kg amphetamine showed significant dopamine (DA) concentration enhancement in the brainstem 2 h p.i.,while pretreatment with 10mg/kg THC, which also caused a 15% DA increase, raised the DA content by 50%. Norepinephrine in the brainstem and hypothalamus was reduced by amphetamine but THC had no effect on the concentration of this catecholamine. After subchronic treatment with THC, tolerance is demonstrable to all THC effects tested, but no cross-tolerance between the two compounds occurs since the pharmacologic and biochemical effects of amphetamine occur despite the subchronic THC treatment. 43 references. (Author abstract modified)

000140 Haubrich, Dean R.; Wang, Paulina F. L. Merck Institute for Therapeutic Research, West Point, PA 19486 **N,N-dimethyltryptamine lowers rat brain acetylcholine and dopamine.** Brain Research (Amsterdam). 131(1):158-161, 1977.

To determine the effects of N,N-dimethyltryptamine (DMT), an endogenous hallucinogen possibly involved in the etiology of schizophrenia, on the metabolism of catecholamines and acetylcholine (ACh), levels of choline, ACH, homovanillic acid (HVA), dopamine (DA), and norepinephrine (NE) were determined in rat brain following administration of DMT. DMT treated rats displayed all overt symptoms found previously in rats treated with other tryptamine receptor stimulants. No significant effects of DMT on HVA and NE were found, however, DMT caused a significant decrease in DA concentration in the forebrain and significant decrease in ACh in the corpus striatum but not in the cortex. Increased concentrations of free choline in both cortex and corpus striatum suggests that this effect was unrelated to changes in ACh concentration. It is concluded that DMT stimulates the release of DA from dopaminergic neurons thereby lowering the concentration of the neurotransmitter. Taken together with previous behavioral findings, this activation of cerebral dopaminergic neurons is consistent with the theory of a possible link between endogenous formation of DMT and the hyperactivity of dopaminergic neurons in schizophrenia. 24 references.

000141 Herblin, W. F. E. I. du Pont de Nemours and Company, Wilmington, DE 19898 **The selective inhibition of dopamine uptake by a tricyclic imine.** Neurochemical Research. 2(1):111-116, 1977.

A tricyclic imine, N-cyclopropylemthyl-10,11-dihydro-5H-dibenzo-(a,d)-cyclohepten-5-imine (CDCI), was tested as an in-

hibitor of the dopaminergic uptake system in the striatal synaptosomes of the rat. It was found to be a potent and specific inhibitor of dopamine uptake. The data for analogues of CDCI indicate that even slight structural modifications reduce both the potency and selectivity of dopamine uptake inhibition. Kinetic analysis indicates essentially pure competitive inhibition. CDCI is also found to have a remarkable lack of activity on other pharmacological systems. 6 references. (Author abstract modified)

000142 Hermann, W.; Graefe, K.-H. Institut fur Pharmakologie und Toxikologie, Universitat Wurzburg, Versbacher Landstr. 9, D-8700 Wurzburg, Germany **Relationship between the uptake of 3H-(plus or minus) metaraminol and the density of adrenergic innervation in isolated rat tissues.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 296(2):99-110, 1977.

To study the uptake of 3H-(plus/minus)metaraminol (MA) by tissue slices or pieces in vitro in several peripheral rat organs of varying density of sympathetic innervation, tissues were incubated with substrate concentrations of 0.25-12.2microM MA and rates of uptake were determined. In all tissues the total uptake of MA was saturable. Under the condition of inhibition of neuronal uptake by the presence of 100microM cocaine, the uptake of MA was no longer saturable. When tissues were exposed to 1.4microM MA, the relative contribution by extraneuronal (measured in the presence of cocaine) to total amine uptake (measured in the absence of cocaine) was inversely correlated with the log endogenous noradrenaline content. After correction of the rates of total MA uptake for the cocaine resistant distribution of the amine, a saturable component of uptake was obtained for each tissue. This uptake was considered to be neuronal; it was subjected to kinetic analysis. Apparent Km values for the neuronal uptake of MA were very similar in all tissues and did not show any dependence on the tissue level of endogenous noradrenaline. Vmax values for the neuronal uptake of MA were linearly correlated with the endogenous noradrenaline content of the tissues, the Vmax for the vas deferens being excluded. When related to the content of endogenous noradrenaline, the Vmax obtained in the vas deferens was lower than that for all other tissues. The results strongly suggest that the membrane site involved in neuronal amine uptake is likely to be identical in all rat tissues and that the number of uptake sites available per nerve terminal does not vary greatly between tissues. 45 references. (Author abstract modified)

000143 Hershkowitz, Moshe; Goldman, Rachel; Raz, Avraham. Department of Isotopes, Weizmann Institute of Science, Rehovot, Israel **Effect of cannabinoids on neurotransmitter uptake, ATPase activity and morphology of mouse brain synaptosomes.** Biochemical Pharmacology (Oxford). 26(14):1327-1331, 1977.

The effect of cannabinoids on neurotransmitter uptake, adenotriphosphase (ATPase) activity and morphology of mouse brain synaptosomes was studied. Delta1-tetrahydrocannabinol (delta1-THC) and cannabidiol (CBD), a psychoactive and a nonpsychoactive constituent of marihuana, respectively, were found to exert a dose dependent inhibition on the uptake of 3H labeled norepinephrine (NE), dopamine (DA), gamma-aminobutyric acid (GABA), and serotonin (5-HT), by mouse brain synaptosomes. CBD was found to be more effective than delta1-THC in the inhibition of neurotransmitter uptake, except in the case of 5-HT. Both drugs inhibit ATPase activities, and electron microscopy revealed that synaptosomal preparations are damaged at doses producing 40% inhibition. Thus, inhibition of uptake could stem from either failure of ATPase activity, from disruption of synaptosomes, or from both. 27 references. (Author abstract modified)

000144 Hery, F.; Bourgoin, S.; Hamon, M.; Ternaux, J. P.; Glowinski, J. Groupe NB-INSERM U. 114, Neurophysiologie, College de France, 11, place Marcelin Berthelot, F-75231 Paris-Cedex 05, France **Control of the release of newly synthesized 3H-5-hydroxytryptamine by nicotinic and muscarinic receptors in rat hypothalamic slices.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 296(2):91-97, 1977.

To examine the effects of various cholinergic agonists and antagonists on the spontaneous release of newly synthesized 3H-5-hydroxytryptamine (3H-5-HT) in rat hypothalamic slices, 3H-5-HT was measured in incubating medium at the end of a 30 min incubation carried out with L-3H-tryptophan in the presence of the various drugs tested. Acetylcholine in the presence of eserine and carbachol stimulated the release of 3H-5-HT. In contrast, oxotremorine reduced the 3H-amine release. The effect of carbachol was blocked by two nicotinic blockers, mecamylamine and d-tubocurarine. It was not reduced by the muscarinic antagonists, atropine and scopolamine. In fact, each of two antagonists added alone to the incubating medium enhanced 3H-5-HT release. The scopolamine stimulating effect on 3H-5-HT release was suppressed by d-tubocurarine. Finally, the inhibiting effect of oxotremorine on 3H-5-HT release was not prevented by d-tubocurarine but was in the presence of atropine (10-6 M) or scopolamine (10-6 M). In the concentrations used in the release study, the cholinergic agonists and antagonists had no effect on the total formation of 3H-5-HT and 3H-5-hydroxyindoleacetic acid from L-3H-tryptophan and on the accumulation of L-3H-tryptophan in tissues. In these concentrations, except for eserine, they did not affect the uptake of exogenous 3H-5HT in hypothalamic synaptosomes. These results suggest that cholinergic receptors of the muscarinic and nicotinic type are involved in the control of 3H-5HT release; since the stimulation of the muscarinic and nicotonic cholinergic receptors resulted in an inhibition and an activation of 3H-5HT release, respectively. 34 references. (Author abstract modified)

000145 Hidaka, Hiroyoshi; Nagasaka, Akio. Department of Biochemistry, Institute for Developmental Research, Aichi Prefecture Colony, Aichi 48003, Japan **Inhibition of dopamine beta-hydroxylase by anti-thyroid agents, methimazole and propylthiouracil.** Biochemical Pharmacology. 26(11):1092-1094, 1977.

The inhibition of purified bovine adrenal gland dopamine beta-hydroxylase (DBH) by the antithyroid agents, methimazole and propylthiouracil and their analogs were studied. DBH was inhibited by methimazole, 2-mercaptoimidazole, propylthiouracil and 2-thiouracil, but not by 1-methyl-imidazole or imidazol. The inhibition by methimazole and propylthiouracil was not reversed by N-ethylmaleimide (NEM), but the inhibition by 2-mercaptoimidazole and 2-thiouracil was partially reversed by NEM. Dixon plots showed that methimazole and propylthiouracil inhibited DBH differently than do other sulfhydryl compounds. Propylthiouracil was noncompetitive for both the substrate and ascorbic acid, but methimazole was competitive for the substrate and exhibited an unknown type of inhibition for ascorbic acid. The results might suggest that the inhibition of DBH by methimazole and propylthiouracil is not due to simple chelation between these compounds and copper in the enzyme. It is unlikely that these compounds alleviate hypterthyroidism by inhibiting DBH, due to the high concentrations needed for inhibition. 6 references.

000146 Hilton, James G. Dept. of Pharmacology and Toxicology, Univ. of Texas Medical Branch, Galveston, TX 77550 **Acetylcholine stimulation of the sympathetic ganglia: effects of taurine and nicotinic and muscarinic ganglion block.** Journal of Pharmacology and Experimental Therapeutics. 203(2):426-434, 1977.

In an investigation of the effects of nicotinic and muscarinic blockade and taurine on the responses to graded doses of acetylcholine in pentobarbital anesthetized dogs, acetylcholine was administered by intraarterial injection and the changes in cardiac force of contraction were measured as an index of ganglion stimulation. Responses to dimethylphenylpiperazinium (DMPP) and preganglionic electrical stimulation of the sympathetic nerve trunk were also observed to determine the status of the nicotinic receptors and ganglion transmission. The results showed that after nicotinic ganglion block, the response to DMPP and to preganglionic electrical stimulation were depressed but the responses to acetylcholine were increased. Muscarinic ganglion block after the nicotinic block further depressed transmission and depressed, but did not totally block, acetylcholine. Nicotinic ganglion block after the muscarinic blockade decreased both DMPP responses and transmission but did not alter the responses to acetylcholine. Taurine did not significantly alter any of the responses measured before ganglion blocking agents. After nicotinic ganglion block with chlorisondamine, taurine blocked the potentiation of muscarinic ganglion stimulation but did not alter the block of preganglionic electrical stimulation or DMPP responses. After combined nicotinic and muscarinic ganglion block, taurine significantly reduced the residual acetylcholine response but did not alter the block of other ganglion responses. Exogenous acetylcholine seems to act primarily as a muscarinic ganglion stimulant similar to McN-A-343, but is not as effectively blocked by atropine as McN-A-343 and that taurine acts by blocking a second muscarinic ganglion receptor. 15 references. (Author abstract modified)

000147 Hitzemann, Robert J.; Loh, Horace H. Department of Pharmacology, University of California, San Francisco, CA 94143 **Influence of chronic pentobarbital or morphine treatment on the incorporation of 32Pi and (3H)choline into rat synaptic plasma membranes.** Biochemical Pharmacology. 26(11):1087-1089, 1977.

The effects of chronic pentobarbital (PB) and morphine treatment on the incorporation of 32P-phosphoric acid (Pi) and 3Hcholine (C) into rat subcortical synaptic plasma membranes were studied by determining the incorporation of Pi and C into phospholipids membranes (SPM-L) and (SPM-H) derived from light and heavy populations, respectively, of nerve ending particles. The former preferentially transported gamma-aminobutyric acid while the latter preferentially transported norepinephrine. Chronic PB treatment increased the incorporation of Pi into a SPM-H acid phospholipid fraction which contained phosphatidylserine (PS) and phosphatidylinosito (PI) at 3 and 24 hr, decreased the incorporation into phosphatidylethanolamine (PE) at 3 hr, but not at 24 hr and had no effect on incorporation into phosphatidylcholine (PC). PB had no effect on C incorporation into PC at 3 hr, but decreased it by 24 hr. In contrast, PB inhibited the incorporation of Pi into PS plus PI. The effects of morphine on the incorporation of Pi or C were generally similar to the effects of PB; however, chronic morphine did not increase the Pi incorporation into the SPM-H acidic phospholipid fraction at 24 hr or inhibit Pi incorporation PE at 3 hr. The results indicate that during a phase of rapid morphine tolerance and dependence development, there are no simultaneous large increases in SPM phospholipid turnover. 21 references.

000148 Hoffmeister, Friedrich. Institut fur Pharmakologie der Bayer AG, D-5600, Wuppertal-Elberfeld, Germany **Reinforcing properties of perphenazine, haloperidol and amitryptiline in rhesus monkeys.** Journal of Pharmacology and Experimental Therapeutics. 200(3):516-522, 1977.

Possible negative reinforcing effects of perphenazine, haloperidol and amitryptiline were studied in rhesus monkeys previously trained to avoid electric shock by responding. Responding extinguished a light associated with an intravenous drug infusion scheduled to occur 30 sec after the light was switched on. A response occurring when the light was on switched the light off for a period of 1 min (time out period). A response during the infusion terminated the infusion. Under these conditions, the monkeys tolerated a large number of saline infusions. Saline was replaced by different doses of perphenazine, haloperidol, and amitryptiline, each for 12 successive daily 2 hr sessions. Infusions of perphenazine (0.50 to 1.6micro/kg) and to a lesser extent infusions of haloperidol (2.5micro/kf) generated and maintained responding. Most of the infusions of amitryptiline (1.0to 10.0micro/kg) were tolerated. Haloperidol and perphenazine in doses higher than 10.0micro/kg, depressed markedly responding maintained by termination of electric shock. Amitryptiline (500 to 3000micro/kg i.v.)had no influence on shock avoidance behavior. Positive reinforcing effects of these compounds were studied in a group of monkeys trained to respond under a 10 response fixed-ratio of intravenous infusions of codeine. None of the three compounds maintained responding previously engendered by codeine. 7 references. (Author abstract)

000149 Holbrook, L.; Brown, I. R. Department of Zoology, Scarborough College, University of Toronto, West Hill, Ontario M1C 1A4, Canada **Disaggregation of brain polysomes after D-lysergic acid diethylamide administration in vivo: mechanism and effect of age and environment.** Journal of Neurochemistry (Oxford). 29(3):461-467, 1977.

The cell free protein synthesis activity and tRNA content of the increased pool of brain monosomes produced after D-lysergic acid diethylamide (LSD) administration were analyzed. Decreased reinitiation of protein synthesis rather than RNase activation or premature termination was shown to be the mechanism which results in brain polysome disaggregation after administration of the drug in vivo. At a constant dosage of 50 microgram/kg the degree of polysome shift increases with age from 3-week-old rabbits to adults. There is also an extensive disaggregation of fetal brain polysomes when LSD is administered maternally. The LSD induced polysome shift was shown to be altered by holding cage environment, pre LSD sedation and post LSD handling with brief restraint. It was apparent that elements of environment and physiological arousal were involved in the macromolecular effect of the drug on the protein synthesis apparatus of the brain. 51 references. (Author abstract)

000150 Hollt, Volker; Czlonkowski, Andrzej; Herz, Albert. Department of Neuropharmacology, Max-Planck-Institut fur Psychiatrie, D-8000 Munich 40, Germany **The demonstration in vivo of specific binding sites for neuroleptic drugs in mouse brain.** Brain Research (Amsterdam). 130(1):176-183, 1977.

To further examine the significance of dopamine (DA) receptor binding sites of neuroleptic drugs, male mice were injected intravenously with a tracer dose of labelled spiroperidol either alone or with increasing doses of unlabelled neuroleptic drugs or DA agonists, and radioactivity was determined either in whole brain or in various brain parts. The ratio of concentration of labelled spiroperidol in the brain without cerebellum

(brain) to that in the cerebellum was used as a measure of the occupation of specific binding sites. It was found that all neuroleptics tested with the exception of L-butaclamol reduced the brain/cerebellum ratio of spiroperidol from 2.8to 1.4and the striatum/cerebellum ratio from 5 to 1.4. Apomorphine and piribedil did not reduce the brain/cerebellum ratio of spiroperidol to the same extent as did the neuroleptics. It is concluded that there is a dose dependent saturable component of spiroperidol binding which is highest in the striatum but absent in the cerebellum which can be prevented or diminished by simultaneous administration of other neuroleptics or DA agonists, and that only biologically active stereoisomers of neuroleptics inhibit saturable binding of spiroperidol in brain. 21 references.

000151 Hunt, Peter; Raynaud, Jean-Pierre. Centre de Recherches Roussel Uclaf, F-93230 Romainville, France **Benzodiazepine activity: is interaction with the glycine receptor, as evidenced by displacement of strychnine binding, a useful criterion?.** Journal of Pharmacy and Pharmacology (London). 29(7):442-444, 1977.

The effects of several benzodiazepine derivatives, nonbenzodiazepine psychotherapeutic agents and other compounds having myorelaxant and/or anticonvulsant activity on the displacement of specific radiolabeled strychnine binding from the glycine receptor in synaptic membranes from rat spinal cord and pons medulla were investigated in order to evaluate the usefulness and the specificity of this in vitro procedure for the evaluation of benzodiazepines and as a criterion for benzodiazepine like activity. It was found that: 1) the in vitro activities of individual benzodiazepine derivatives do not consistently reflect large differences in pharmacological activity; 2) the liposolubility of the individual benzodiazepines, as estimated by measurement of their Rm values, parallels their in vitro displacement of strychnine binding, suggesting that this may be a factor in displacement of strychnine binding; 3) the nonbenzodiazepine psychotherapeutic drugs and the centrally acting muscle relaxant thiocolchicoside are active in this procedure; and 4) nonbenzodiazepine drugs with myorelaxant and/or anticonvulsant activity are inactive in displacing strychnine binding. It is posited that the usefulness of this in vitro system as a criterion for benzodiazepine like activity and as a predictive test for the selection of novel anxiolytic drugs is severely limited. 9 references.

000152 Illing, H. P. A.; Yeomans, M. A.; Rising, P. A.; Johnson, P. Hoechst Pharmaceutical Research Laboratories, Walton Manor, Walton, Milton Keynes MK7 7AJ, England **Enzymic dealkylation of a substituted aminoacetamidobenzophenone and cyclization to the corresponding benzodiazepine in vitro.** Xenobiotica (London). 7(7):439-454, 1977.

To elucidate the metabolism of 9-(5-cyano-N-methyl-3,5-dimethyl-3-aza-pentanamido)-5-nitrobenzophenon (C 72 0045) in vitro, a series of studies was undertaken with rat, mouse, and dog liver slices and microsomes. Whereas in dog and mouse liver slices (14C)C 72 0045 was metabolized to material chromatographically identical to nitrazepam and nimetazepam, in rat liver slices more polar products were formed. In microsomal preparations, from all three species, fortified with an NADPH regenerating system, two products were formed simultaneously, one of which was further metabolized to nimetazepam. Rat liver microsomes performed the transformation much faster than liver microsomes of dog or mouse, as reflected in kinetic parameters. Formaldehyde was produced concomitantly with the formation of one initial metabolite and concomitantly with the further metabolism of the second initial metabolite to nimetazepam. The enzyme required to initiate the metabolism was located in the microsomal fraction, required NADPH and air, was induced two-fold by pretreating rats with phenobarbitone and was inhibited by CO, SKF 525-A, and 8-hydroxyquinoline but not by iproniazid or cysteine. Transformation of one metabolite to nimetazepam required microsomes and an NADPH regenerating system incubated aerobically. No further intermediate was detected. A possible route is proposed for the formation of nimetazepam from C 72 0045 by dealkylation and cyclization via a specific intermediate metabolite. 25 references. (Author abstract modified)

000153 Iwamoto, Kikuo; Klaassen, Curtis D. Dept. of Pharmacology, Univ. of Kansas Medical Center, Kansas City, KS 66103 **First-pass effect of nalorphine in rats.** Journal of Pharmacology and Experimental Therapeutics. 203(2):365-376, 1977.

The first pass effect of nalorphine was measured in male rats by comparing the plasma concentrations after intravenous, p.o.,and intraportal administration, and the relative importance of the liver and the intestine in producing this effect is described. The major metabolic pathway for nalorphine was found to be N-deallylation and glucruonidation. About 50% of the administered radioactivity was excreted in expired air and urine by 48 hours after either i.v. or p.o. administration, suggesting that the absorption of nalorphine was esentially complete. The route of administration did not change the plasma elimination half-life. In contrast, the area under the plasma concentration time curve for nalorphine after p.o. administration was 17% and after intraportal administration was 25% of that observed after i.v. administration. Therefore, 83% of the p.o. dose was removed by extraction and/or metabolism in the intestine and/or liver during the first passage through these organs. It is concluded that the estimates of the relative contribution of the liver and intestine in producing the first-pass effect of these narcotic agents are consistent with the extent of hepatic uptake and intestinal glucuronidation of morphine and nalorphine. 20 references. (Author abstract modified)

000154 Iwatsubo, Katsuya; Clouet, Doris H. Osaka University Dental School, Osaka, Japan **Effects of morphine and haloperidol on the electrical activity of rat nigrostriatal neurons.** Journal of Pharmacology and Experimental Therapeutics. 202(2):429-436, 1977.

The effects of morphine on the electrical activity of rat brain nigrostriatal neurons were compared with those of known dopamine (DA) receptor agonists and antagonists to clarify the effects of opiates on postsynaptic DA receptors in the striatum. The systemic administration of either morphine or haloperidol increased the rate of spontaneous firing of neurons in substantia nigra. The injection of either drug directly into the caudate nucleus of the striatum also increased the firing rates of nigral neurons. Naloxone blocked or reversed the action of systemically or locally administered morphine on the firing rates, but not those of haloperidol. The DA receptor agonists DOPA and apomorphine decreased the firing rate in nigral neurons and reversed the stimulation of firing rates by morphine. These drugs were only partially successful in reversing the effects of haloperidol. The results support the hypothesis that opiates do not act directly on the postsynaptic DA receptor in the striatum. 22 references. (Author abstract modified)

000155 Jaim-Etcheverry, Guillermo; Zieher, Luis Maria. Instituto de Biologia Celular, Facultad de Medicina, Paraguay 2155, 1121 Buenos Aires, Argentina **Differential effect of various 6-hydroxydopa treatments on the development of central and peripheral noradrenergic neurons.** European Journal of Pharmacology (Amsterdam). 45(2):105-106, 1977.

A series of studies was undertaken to determine the differential effects of various 6-hydroxydopa treatments on the development of central and peripheral noradrenergic neurons in rats. 6-Hydroxydopamine or 6-hydroxydopa injected systemically into newborn rats produced marked changes in the development of central and peripheral noradrenergic neurons. Noradrenaline concentration was elevated in the brainstem, particularly in the pons, and decreased in the cerebral cortex and the spinal cord while in the cerebellum, the effects were dependent on the mode of administration. The changes produced by 6-hydroxydopa in brain regional noradrenaline were related to the dose injected at birth. Similar modifications in the development of central noradrenergic neurons were found in the offspring of rats which had received 6-hydroxydopa at 16 days of gestation. The involvement of peripheral sympathetic neurons varied with the compound used and the form of its administration. Thus, 6-hydroxydopamine produced a permanent although partial peripheral sympathectomy, an effect which was less evident following multiple injections of 6-hydroxydopa after birth and almost minimal after a single injection. The prenatal administration of 6-hydroxydopa did not alter peripheral sympathetic neurons. It is concluded that with the appropriate treatment schedule, it is possible to lesion selectively the noradrenergic neurons in the central nervous system. 38 references. (Author abstract modified)

000156 Jain, Mishrilal. Maryland Psychiatric Research Center, Baltimore, MD 21228 **Monoamine oxidase: examination of multiple forms.** Life Sciences (Oxford). 20(12):1925-1934, 1977.

The controversial isoenzyme concept of monoamine oxidase (MAO), an enzyme which plays a central role in biogenic amine metabolic pathway and whose inhibitors demonstrate therapeutic benefit in clinical psychiatry, is examined. The multiple form, or isoenzyme concept, received impetus from the demonstration of several enzyme bands when solubilized MAO was subjected to polyacrylamide gel or sephadex using different tissues from various sources. The multiplicity of MAO inferred from the electrophoretic data is inconclusive, however. Substrate specificity and inhibitor selectivity are another set of criteria for the existence of multiple forms, since they indicate at least two forms: type A with serotonin and norepinephrine as substrates and clorgyline and harmaline as inhibitors, and type B with phenylethylamine and benzylamine as substrates and deprenyl and pargyline as inhibitors. Dopamine, tryptamine, and tyramine are common substrates for both forms. Mechanism of action studies of several MAO inhibitors and immunological studies have yielded little support for the multiple form concept. It is concluded that the isoenzyme concept of MAO should be further researched before an unequivocal assertion can be made. 63 references.

000157 Jarbe, T. U. C.; Ohlin, G. Ch. Department of Psychology, University of Uppsala, Box 227, S-75104 Uppsala, Sweden **Stimulus effects of delta9-THC and its interaction with naltrexone and catecholamine blockers in rats.** Psychopharmacology (Berlin). 54(2):193-195, 1977.

Rats trained in a T-shaped maze to discriminate the effects of i.p. injections of delta9-tetrahydrocannabinol (THC, 4mg/kg) and the effects of the vehicle were tested for antagonism and generalization to the THC stimulus by naltrexone (4mg/kg), haloperidol (0.32mg/kg), propranolol (20mg/kg), and phenoxybenzamine (10mg/kg). None of the drugs blocked the THC stimulus, nor did they generalize to THC. Results demontrated the stimulus effects of THC and its interaction with naltrexone and catecholamine blockers in rats. 19 references. (Author abstract modified)

000158 Javoy, F.; Euvrard, C.; Herbet, A.; Glowinski, J. Groupe NB, INSERM U.114, College de France, 11 place Marcelin Berthelot, F-75231 Paris Cedex 5, France **Involvement of the dopamine nigrostriatal system in the picrotoxin effect on striatal acetylcholine levels.** Brain Research (Amsterdam). 26(2):382-386, 1977.

Modifications of GABAergic transmission in rat brain were induced by picrotoxin and diazepam to determine if these modifications resulted in changes in the activity of the striatal cholinergic neurons; it was then investigated whether the effect of picrotoxin on the striatal cholinergic neurons was induced at the nigral level mediated by the nigrostriatal dopaminergic neurons, or at the striatal level. Modifications in the activity of cholinergic neurons were estimated by following the changes in endogenous levels of acetylcholine (ACh) in various rat brain structures 60 min after the injection of picrotoxin. The procedure resulted in an increase in the striatal ACh content but was without effect on ACh levels in the hippocampus or the limbic nuclei. The selective effect on striatal cholinergic neurons indicated that changes in ACh levels were not related to an action of picrotoxin on enzymes involved in the metabolism of the transmitter. To determine if the effect of picrotoxin on striatal ACh levels was mediated by dopaminergic neurons, the drug was injected 10 days after the chemical destruction of the nigrostriatal dopaminergic pathway. This procedure led to almost complete degeneration of the dopaminergic pathway. Diazepam injected shortly before picrotoxin did not significantly affect striatal ACh levels by itself, but prevented the picrotoxin induced increase in striatal ACh. These results underline the inhibitory role of a descending GABAergic pathway on the activity of the nigrostriatal dopaminergic neurons and confirm the inhibitory influence of the dopaminergic neurons on the striated cholinergic neurons. 40 references.

000159 Kafoe, W. F.; Leonard, B. E. Pharmacology Department, Organon International B.V., Oss, The Netherlands **Effects of Org 6582, chlorimipramine and desmethylimipramine on the depletion of biogenic amines from the rat brain in vivo.** Biochemical Pharmacology. 26(11):1083-1084, 1977.

The effects of Org 6582 (a bicyclononene derivative) chlorimipramine (CP), and desmethylimipramine (DMI) on the depletion of biogenic amines from the rat brain in vivo were studied. The depletion of brain noradrenaline (NA) by 4-alpha-dimethyl-m-tyramine (H77/77) was twice the percent depletion of dopamine (DA). DMI partially reversed the depletion of NA by H77/77 but had no effect on the depletion of DA. Org 6582 did not affect either NA or DA depletion. The results suggest that different mechanisms possibly regulate the uptake of these 2 catecholamines. Org 6582 and CP significantly reversed the depletion of brain serotonin by 4-methyl-alpha-ethyl-m-tyramine. The results indicate that Org 6582 could be a specific inhibitor of serotonin uptake into central neurons in vivo. 24 references.

000160 Kaiya, Hisanobu; Iwata, Tsuyoshi; Moriuchi, Iwao; Namba, Masuyuki. Department of Neuropsychiatry, Gifu

University, School of Medicien, Gifu, Japan **Chlorpromazine induces population increase of synaptic vesicles in the rat hypothalamic ventromedial nucleus.** Biological Psychiatry. 12(3):323-330, 1977.

To evaluate the effects of chlorpromazine (CP) on increase of synaptic vesicles, the population of synaptic vesicles per synaptic area in the hypothalamic ventromedial nucleus of rats treated with CP for 3 days was compared with that of controls. In type 1 synapse, which contained 400 to 800 angstrom small spherical vesicles (s-vesicles), together with 800 to 1200 angstrom large spherical dense-cored vesicles (lc-vesicles), the population of s-vesicles increased 57.8% in the CP rats. In type 2 synapse, which contained only s-vesicles, the rate of increase among CP animals was 15.4%. Findings suggested that CP blocks the release of the vesicles from the presynaptic site or inhibits the transport function for biogenic amines through the presynaptic membrane, and type 1 synapse may be aminergic. 26 references. (Author abstract)

000161 Kehr, W.; Carlsson, A.; Lindqvist, M. Department fur Neuropsychopharmakologie, Schering AG, Mullerstrasse 170-178, D-1000 Berlin 65, Germany **Catecholamine synthesis in rat brain after axotomy: interaction between apomorphine and haloperidol.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 207(2):111-117, 1977.

The interaction between apomorphine and haloperidol and its role in catecholamine synthesis in rat brain after axotomy was investigated. Axotomy of the ascending monoaminergic fibers stimulated formation of dopa after inhibition of the aromatic amino acid decarboxylase with 3-hydroxybenzylhydrazine HCl in c. striatum and part of the limbic system. Apomorphine antagonized dopa accumulation in the intact and lesioned side. Haloperidol stimulated dopa accumulation of the intact side only. When administered together, the inhibitory effect of apomorphine was counteracted by haloperidol on both sides. Dopamine concentration was slightly higher in the lesioned c. striatum as compared to the intact side. Hemitransection caused a decrease in noradrenaline, especially in the hemisphere portion and neither drug changed the effect. Tyrosine concentration was higher on the lesioned than on the intact side of all brain structures. Findings supported the view that a local presynaptic receptor mediated feedback mechanism exists which is controlling dopamine synthesis even in the absence of impulse flow. 37 references. (Author abstract modified)

000162 Keller, William J.; Ferguson, Gary G. School of Pharmacy, Northeast Louisiana University, Monroe, LA 71209 **Effects of 3,4-dimethoxyphenethylamine derivatives on monoamine oxidase.** Journal of Pharmaceutical Sciences. 66(7):1048-1050, 1977.

To elucidate possible biochemical and metabolic correlates of reported psychotomimetic effects of some cacti, the effects of the catus alkaloid, 3,4-dimethoxyphenethylamine and its derivatives on rat brain monoamine oxidase were investigated. It was found that 3,4-dimethoxyphenethylamine and its naturally occurring N-methylated homologs inhibited the deamination of tyramine and tryptamine by rat brain monoamine oxidase. In contrast, the beta-hydroxylated derivatives of this series failed to inhibit the action of monoamine oxidase on both tyramine and tryptamine. The alleged mind altering effects produced by ingesting cacti containing one or more of the test compounds could be partially explained by data generated from this investigation. 34 references. (Author abstract modified)

000163 Kemp, J. A.; Walker, R. J.; Woodruff, G. N. Department of Physiology and Biochemistry, Southampton University, Southampton SO9 5NH, England **The actions of cholinomimetics and catecholamines on rat substantia nigra neurones.** British Journal of Pharmacology (London). 60(2):271P-272P, 1977.

Cholinomimetics and catecholamies were applied iontophoretically to substanitia nigra cells in female rats to examine the characteristics of the acetylcholine and catecholamine receptors of nigra neurons. Of 190 cells tested, acetylcholine excited 105 and inhibited 20; nicotine excited 41 and inhibited two of 70 cells tested. Furtrethonium excited 11 and inhibited three of 19 cells; carbachol excited 15 and inhibited one of 19 cells. All four carbachol responses tested with atropine were reversibly inhibited. Atropine blocked two of three acetylcholine excitations and both nicotine excitations on which it was tested. Physostigmine applied prior and concurrently with acetylcholine potentiated the acetylcholine responses on all five occasions. Close correlation occurred between the effects following application of noradrenaline (NA) and adrenaline to nigra cells, but no such correlation occurred between dopamine (DA) and NA responses. It was suggested that cholinergic excitations are produced by stimulation of a mixed nicotinic/muscarinic receptor while inhibitions may be muscarinic. The catecholamine results are consistent with two populations of adrenergic receptors, one stimulated by DA and one by NA and adrenaline. 6 references.

000164 Key, B. J.; Krzywoskinski, L. Department of Pharmacology (Preclinical), Medical School, University of Birmingham, Birmingham B15 2TJ, England **Electrocortical changes induced by the perfusion of noradrenaline, acetylcholine and their antagonists directly into the dorsal raphe nucleus of the cat.** British Journal of Pharmacology (London). 61(2):297-305, 1977.

The electrocortical changes induced by perfusion of noradrenaline, acetylcholine and their antagonists directly into the dorsal raphe nucleus of the cat encephale isole preparation were studied. (-)-Noradrenaline (NA), (-)-adrenaline, or (-)-isoprenaline (Isop) produced intermittent or sustained electrocortical desynchronization during the perfusion period. These changes were markedly attenuated or completely abolished by the prior perfusion of sotalol or (-)-propranolol, but not by equimolecular concentrations of (-)-propranolol. The effects of NA or Isop were also blocked by phentolamine, whereas phenoxybenzamine either potentiated the responses to NA and Isop or mimicked the effects of these catecholamines. The effect of dopamine was similar to that induced by NA, but could not be elicited at all of the perfusion sites where NA was effective. It could be blocked by sotalol or (-)-propranolol and also by the prior perfusion of fusaric acid. Acetylcholine (ACh) increased, or initiated, electrocortical synchronization. These effects could be antagonized by sensory stimulation, the prior perfusion of atropine, or the simultaneous perfusion of NA at the same site. Lignocaine, induced prolonged electrocortical desynchrozination, behavioral alerting and an increased responsiveness to sensory stimulation. The results are discussed in relation to the possible involvement of inhibitory beta-adrenoceptors and facilitatory cholinoceptors (muscarinic) in the functioning of the dorsal raphe nucleus. 31 references. (Author abstract)

000165 Khafagy, Ekram Z. ; El-Laithy, A. F.; El-Makkawi, H. K.; El-Darawy, Z. I. Biochemistry Lab., National Research Centre, El-Dokki, Cairo, Egypt **New aspects concerning the mechanism of action of tranquilizers. The influence of some**

tranquilizers on protein and nucleic acid syntheses. Biochemical Pharmacology (Oxford). 26(13):1205-1211, 1977.

In a study concerning the mechanism of action of tranquilizers, nucleic acid and protein syntheses were inhibited in the presence of chlorpromazine, promethazine, 2-chlorophenothiazine and librium. The presence of the dimethylaminoalkyl side chain of chlorpromazine is essential for potent inhibition of these macromolecular syntheses. In parallel with the inhibition of protein synthesis, the processes of derepression of alkaline phosphatase and induction of beta-galactosidase were also inhibited in the presence of chlorpromazine and librium. All of the effects of these drugs on protein and nucleic acid syntheses in E. coli B are not due to an increased destruction of ATP in the drug treated cultures. The interference with protein and nucleic acid syntheses may be due to the interaction of these drugs and deoxyribonucleic acid (DNA). Chlorpromazine is found to be effective in displacing methyl green from its complex with DNA and form insoluble complex with DNA. 24 references. (Author abstract)

000166 Khalsa, J. H.; Davis, W. Marvin. Stanford Research Institute, Arlington, VA 22209 **Motility response to morphine and amphetamine during chronic inhibition of tyrosine hydroxylase or dopamine beta-hydroxylase.** Journal of Pharmacology and Experimental Therapeutics. 202(1):182-191, 1977.

To determine the effects of L-alpha-methyl-para-tyrosine (AMT) and the dopamine beta-hydroxylase inhibitor U-14,624 on morphine and amphetamine induced motility, male rats were administered intraperitoneal doses of saline, AMT, or U-14,624 for 12 to 18 days and were then given single doses of either saline, morphine sulfate (MS), or d-amphetamine sulfate (AS) four or 6 hours after AMT or U-14,624 respectively. The hypermotility induced by MS and AS was significantly antagonized by both inhibitors of catecholamine biosynthesis. Tolerance developed within 6 days to the anti-MS effect of AMT, but not to the antiMS effect of U-14,624 within 18 days. Tolerance developed within 12 days to the anti-AS effect of U-14,624, but only slight tolerance to the anti-AS effect of AMT was seen by day 18. Supersensitivity to the motor effects of MS, but not to those of AS, was seen at 28 and 52 hours after cessation of AMT; none was seen upon cessation of U-14,624. The same treatment with AMT or U-14,624 were given for up to 18 days, and levels of dopamine and norepinephrine were determined in hypothalamus/thalamus, caudate/putamen and remaining brain. Tolerance to catecholamine depleting effect of AMT and to the norepinephrine depleting and dopamine elevating effects of U-14,624 occurred within 12 to 18 days. Thus, tolerance to the blocking of MS or AS stimulated motility preceded that to the neurochemical effects of the catecholamine depleting agents. 44 references. (Author abstract modified)

000167 Klioze, Solomon S.; Bauer, Victor J.; Geyer, Harry M., III. Department of Pharmacology, Hoechst-Roussel Pharmaceuticals, Somerville, NJ 08876 **Synthesis of spiro(isobenzofuran-1(3H),4'-piperdines) as potential central neverous system agents. 2. compounds containing a hetercoatom attached to nitrogen.** Journal of Medicinal Chemistry. 20(4):610-613, 1977.

The synthesis and antitetrabenzine activity of a series of N-heteroatom derivaties of 4-phenylspiro(isobenzofuran-1,4'-piperidines) are reported. Optimal antitetrabenzine activity is associated with compounds containing a sterically unhindered, basic nitrogen. Hydroxylamines 6, 11, 12, and 13 possess the most significant activity with ED sub 50s of 1.4, 3.5, 4.7, and 4.0respectively. These compounds are potential central nervous system agents, and the steric and electronic requirements of the piperidine nitrogen must be defined for optimal activity. 3 references. (Author abstract modified)

000168 Koc, Barbara A.; Marley, E. Department of Pharmacology, Institute of Psychiatry, De Crespigny Park, London SE5 8AF, England **Antipodal central effects of dopamine and apomorphine.** British Journal of Pharmacology (London). 60(2):268P-269P, 1977.

The antipodal central effects of dopamine (DA) and apomorphine (APO) infused into the hypothalamus and 3rd cerebral ventricle of chickens were compared to test the hypothesis that there are two types of DA sites in the central nervous system. DA infused into the hypothalamus of young chicks pretreated with mebanazine induced behavioral and electrocortical sleep, and suppressed vocalization. Body temperature declined at thermoneutrality and mean carbon dioxide elimination fell. APO infused into the identical site evoked behavioral and electrocortical arousal, vocalization and pecking, an increase in body temperature and a mean increase of carbon dioxide elimination. APO evoked behavioral and electrocortical arousal in encephale isole preparations. Similar effects were elicited by DA and APO given in the 3rd cerebral ventrical of adult fowls. The effects of DA but not APO were attenuated by phenoxybenzamine in the hypothalamus. APO effects were attenuated by spiroperidol. Propranolol was ineffective against both DA and APO. Doses of methysergide that prevented arousal with dexamphetamine did not affect response to APO. The results are compatible with the existence of two types of central DA receptor in chickens. 2 references.

000169 Koyuncuoglu, H.; Genc, E.; Gungor, M.; Eroglu, L.; Sagduyu, H. Department of Pharmacology, Istanbul Medical Faculty, Capa, Istanbul, Turkey **The antagonizing effect of aspartic acid on the brain levels of monoamines and free amino acids during the development of tolerance to and physical dependence on morphine.** Psychopharmacology (Berlin). 54(2):187-191, 1977.

The biochemical bases for the action of aspartic acid in preventing the development of physical dependence on and tolerance to morphine and in antagonizing the abstinence syndrome signs were investigated in rats. The brain contents of serotonin, dopamine, noradrenaline, and free amino acids of Ss given aspartic acid and morphine separately and in combination were determined. Most of the morphine induced changes in the brain were normalized in Ss receiving the acid and morphine together. The relative ineffectiveness of aspartic acid in normalizing some amino acid levels decreased by morphine is discussed. 44 references. (Author abstract modified)

000170 Kozhechkin, S. N.; Ostrovskaya, R. U. Institute of Pharmacology, Academy of Medical Sciences of the USSR, Moscow, U.S.S.R. **Are benzodiazepines GABA antagonists?.** Nature (London). 269(5623):72-73, 1977.

A study undertaken to investigate the interaction of chlordiazepoxide and gamma-aminobutyric acid (GABA) in the rabbit is described. Chlordiazepoxide and GABA were simultaneously microiontophoretically applied to single neurones of the sensorimotor cortex of seven adult rabbits, and the effects on glutamate induced firing were recorded. Chlordiazepoxide produced a marked inhibitory effect on glutamate evoked activity, and no antagonism between chlordiazepoxide and GABA was observed. Small applications of chlordiazepoxide or GABA produced only small degrees of inhibition, but combined produced almost complete inhibition. A previous study

of diazepam/GABA interaction indicated that diazepam potentiates the action of GABA on the spontaneous activity of sensorimotor neurones. It is consequently suggested that the actions of the benzodiazepines and GABA are synergistic. 12 references.

000171 Krug, M.; Ott, T.; Schulzeck, Karin; Matthies, H. Institute fur Pharmakologie und Toxikologie, Medizinische Akademie Magdeburg, Leipziger Strasse 44, DDR-301 Magdeburg, Germany **Effects of orotic acid and pirazetam on cortical bioelectrical activity in rabbits.** Psychopharmacology (Berlin). 53(1):73-78, 1977.

To obtain further evidence of the pharmacological effects of retention facilitating substances, the influence of sodium orotate, methylglucamine orotate, and pirazetam on the bioelectrical activity of central nervous system structures were studied. Sodium orotate showed no influence on the cortical and hippocampal spontaneous EEGs of conscious nonimmobilized rabbits. The amplitude of the first surface positive wave of the cortical evoked potential that was elicited by stimulation of tooth pulp was, however, significantly increased in long-lasting terms by both pirazetam and the two salts of orotic acid. Similarly, the three substances also influenced the changes in excitability induced by PTP of tooth pulp. The findings suggest that these chemicals facilitate in nonspecific manner responses to externally applied stimuli through central structures. The relationships between the altered stimulus response and the retention facilitating action of these substances are discussed. 29 references. (Author abstract)

000172 Kuczenski, Ronald. Tennessee Neuropsychiatric Institute, 1501 Murfreesboro Rd., Nashville, TN 37217 **Differential effects of reserpine and tetrabenazine on rat striatal synaptosomal dopamine biosynthesis and synaptosomal dopamine pools.** Journal of Pharmacology and Experimental Therapeutics. 201(2):357-367, 1977.

Rat striatal dopamine levels and synaptosomal dopamine synthesis were determined after the administration of the catecholamine depleting agents reserpine and tetrabenazine. Striatal synaptosomal dopamine synthesis remained unchanged from control levels after reserpine administration over a wide range of doses and times. In contrast, after tetrabenazine administration, dopamine synthesis rapidly increased to values greater than 200% of control values, then returned to control levels. The changes in dopamine synthesis inversely paralleled the depletion of and recovery of striatal dopamine levels. The increased levels of dopamine synthesis did not appear to originate with alterations either in the kinetic properties of tyrosine hydroxylase or in the availability of exogenous or endogenous tyrosine. To assess the contribution of synaptosomal dopamine pools to the regulation of dopamine synthesis in tissue preparations from reserpine or tetrabenazine pretreated animals, synaptosomal dopamine synthesis was assessed in the presence of dopamine releasing agents and compared with analogous experimental manipulations on tissue preparations from animals pretreated with alpha-methyltyrosine or the monoamine oxidase inhibitor, clorgyline. The data are consistent with a differential in vivo interaction of reserpine and tetrabenazine with a nerve ending pool of dopamine which participates in end product inhibition of tyrosine hydroxylase. 32 references. (Author abstract)

000173 Kulcsar, A.; Pieri, L.; Polc, P.; Schaffner, R.; Haefely, W. Pharmaceutical Research Division, F. Hoffmann-La Roche, CH-4002 Basel, Switzerland **Some effects of muscimol in mice, rats and cats.** Experientia (Basel). 33(6):807, 1977.

In a paper presented at the 9th annual meeting of the Union of Swiss Societies of Experimental Biology in Zurich, April 1977, the anticonvulsion effects of muscimol in mice, rats, and cats were reported. Muscimol (M) doses below 10mg/kg(-1) did not protect mice from convulsion by such substances as pentetrazol, strychnine, and picrotoxin. In rats, M induced catalepsy and a synergistic effect was found with haloperidol and diazepam. M reduced the depressant effects of picrotoxin on potentials evoked in the cat substantia nigra by caudate stimulation. The effect of the GABAmimetic M on the whole animal differed considerably from those of agents believed to enhance GABAergic transmission.

000174 Kuschinsky, K.; Ropte, H.; Meseke, R.; Cremer, Hildegard; Sontag, K.-H. Max-Planck-Institute, Abteilung Biochem. Pharmakologie, 3 Hermann-Rein Str., D-3400 Gottingen, Germany **Specific action of narcotics on reflex activation of rat alpha-motoneurones.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 296(3):249-254, 1977.

Specific effects of narcotics (opiates) were studied on rat extensor alpha-motoneurones. The alpha-motoneurones were activated by tetanic stimulation of the cut ipsilateral gastrocnemius/soleus (GS) nerve. Morphine administered intravenously, significantly increased the frequency of reflex discharges. In most of the neurones tested, naloxone given intravenously, abolished the effect of morphine. In some neurones, however, naloxone induced a further activation. The dose of naloxone employed was ineffective when given alone. The effect of morphine was mimicked by an intravenous injection of levorphanol but not by an equimolar dose of the steroisomer dextrorphan, which suggests that the activating effect on alpha-motoneurones is a specific one. An intraperitoneal injection of apomorphine reduced the effect of morphine. The effect of narcotics on alpha-motoneurones parallels narcotic induced catalepsy and muscular rigidity, with regard to dose dependence as well as to the antagonism of naloxone and apomorphine, and suggests that both catalepsy and muscular rigidity are mainly due to an activation of extensor alpha-motoneurones. Since this activation can be inhibited by spinalization of the rats, it can be concluded that the activation is due to a supraspinal action of morphine, resulting in a decreased dopaminergic neurotransmission in the brain. 18 references. (Author abstract)

000175 Laduron, P.; de Bie, K.; Leysen, J. Department of Biochemical Pharmacology, Janssen Pharmaceutica, B-2340 Beerse, Belgium **Specific effect of haloperidol on dopamine turnover in the frontal cortex.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 296(2):183-185, 1977.

In order to examine specific effects of haloperidol on homovanillic acid (HVA) content of the frontal cortex, New Zealand rabbits were injected subcutaneously with a single low dose of haloperidol (0.09mg/kg) and HVA in the frontal cortex, parietal cortex and medulla oblongata was measured. Haloperidol produced marked increases in HVA in rabbit brain. Of the dopamine containing areas studied, the elevation of HVA was significantly greater in the frontal cortex than in the striatum, the tuberculum olfactorium or the parietal cortex. After chronic treatment, a tolerance phenomenon to the effects of haloperidol on HVA was observed only in the striatal and limbic areas. The present results suggest that the frontal cortex may be a preferential target for the antipsychotic activity of neuroleptic agents. 14 references. (Author abstract modified)

000176 LaManna, Joseph C.; Cordingley, Gary; Rosenthal, Myron. Department of Physiology and Pharmacology, Duke University Medical Center, Durham, NC 27710 **Phenobarbital actions in vivo: effects of extracellular potassium activity and oxidative metabolism in cat cerebral cortex.** Journal of Pharmacology and Experimental Therapeutics. 200(3):560-569, 1977.

To further study the in vivo actions of barbiturates in the CNS and to determine if effects on brain energy metabolic activity are a primary drug action or a consequence of electrophysiological alterations, extracellular potassium activity and changes in the reduction levels of intramitochondrial pyridine nucleotide (NAD) and cytochrome were monitored in the cerebral cortex of cats at rest and during electrical stimulation, before and after administration of sodium phenobarbital. Stimulation evoked a transient increase in the level of oxidized NAD which was proportional in magnitude to the associated transient elevation of extracellular potassium. Phenobarbital produced, within minutes, a persistent shift in NAD to a more reduced level indicative of decreased oxygen consumption. Electrical excitability of the cortex also decreased within minutes, although there was no concomitant change in the resting extracellular potassium activity. Cortical stimulation produced transient elevations of potassium activity and NADH oxidation and these responses returned to baselines more slowly following the barbiturate administration. The kinetics of the cytochrome response to cortical stimulation mirrored those of NADH. The prolongation of recovery metabolism following phenobarbital appeared the result of protracted elevation of extracellular potassium activity. The slow return to resting levels of extracellular potassium is probably caused by interference with passive clearance mechanisms. 53 references. (Author abstract modified)

000177 Laschka, E.; Herz, A. Department of Neuropharmacology, Max-Planck-Institut fur Psychiatrie, Kraepelinstrasse 2, D-8000 Munchen 40, Germany **Sites of action of morphine involved in the development of physical dependence in rats: III. autoradiographic studies.** Psychopharmacology (Berlin). 53(1):33-37, 1977.

In a study of sites of action of morphine involved in physical dependence in rats, morphine withdrawal was precipitated by injection of 3H-naloxone into restricted parts of the ventricular system of rats made tolerant to and dependent on morphine by repeated pellet implantation. The spread of the drug was evaluated by autoradiography and compared with the withdrawal signs precipitated in the same experiment. When the antagonist could spread into the tissue surrounding the fourth ventricle and the caudal parts of the aqueduct (penetration depth about 1.5mm), a strong withdrawal syndrome was displayed. In contrast, only weak or no withdrawal signs were observed when the spread of naloxone was restricted to the surroundings of the lateral ventricles, the third ventricle, and the rostromedial parts of the aqueduct. It is concluded that structures located in the anterior part of the fossa Rhomboidea, and possibly also in the caudal part of the periaqueductal grey matter, are sites for the development of physical dependence on morphine giving rise to the withdrawal signs studied in these experiments. 23 references. (Author abstract)

000178 Latini, Roberto; Placidi, Gian Franco; Riva, Emma; Fornaro, Pantaleo; Guarneri, Maurizio; Morselli, Paolo Lucio. Instituto di Ricerche Farmacologiche 'Mario Negri,' Via Eritrea, 62, I-10157 Milan, Italy **Kinetics of distribution of amphetamine in cats.** Psychopharmacology (Berlin). 54(2):209-215, 1977.

The distribution kinetics and metabolic fate of amphetamine were studied in cats. In the brain, high levels of the drug were detected in the grey matter structures at short intervals after administration, while at longer intervals the distribution between white and grey matter areas was more uniform. In peripheral tissues, the greatest concentration was seen in the highly vascularized organs. Para-hydroxyamphetamine was found in minimal amounts in the liver and kidneys and only at trace quantities in the brain. 20 references. (Author abstract modified)

000179 Laubie, M.; Schmitt, H.; Drouillat, M. Department of Cardiovascular Pharmacology, I.N.R.S., 14 rue du Val d'Or, F-92150 Suresnes, France **Central sites and mechanisms of the hypotensive and bradycardic effects of the narcotic analgesic agent fentanyl.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 296(3):255-261, 1977.

To further investigate the bradycardic and hypotensive effects of fentanyl, a narcotic analgesic, a series of experiments utilizing intravenous injections of fentanyl on dogs anesthetized with chloralose was undertaken. It was found that fentanyl augmented the bradycardia produced by electrical stimulation of the carotid sinus nerves. In contrast, the same dose of the drug did not change the bradycardic response to stimulation of the nucleus of the solitary tract (NTS) indicating that a central facilitation of baroreceptor impulses occurs within the NTS, probably at the first synapse of baroreceptor reflex fibres. Bilateral destruction of the NTS caused a fulminating hyptertension and tachycardia similar to that after cutting the baroreceptor afferent fibres. After both procedures, fentanyl micro produced marked hypotension and bradycardia. The bradycardic effect was abolished by cutting both vagal nerves when the dogs were pretreated with a beta-adrenoceptor blocking agent. The results provide evidence that the NTS is not the main site of action either for the hypotensive effect or for the vagally mediated bradycardia of fentanyl. Since the dorsal nucleus of the vagal nerve was destroyed together with the NTS, this nucleus does also not appear to be a major site of the action of fentanyl. Blockade of dopamine receptors by haloperidol or pimozide or of serotonin receptors by methysergide did not change the hypotensive, bradycardic and sympathoinhibitory effects of fentanyl. 22 references. (Author abstract)

000180 Lee, Cheng-Yi; Akera, Tai; Brody, Theodore M. Department of Pharmacology, Univesity of California, San Francisco, CA 94143 **Effects of NA+, K+, Mg++ and Ca++ on the saturable binding of (3H)dihydromorphine and (3H)naloxone in vitro.** Journal of Pharmacology and Experimental Therapeutics. 202(1):166-173, 1977.

The effects of Na+, K+, Mg++ and Ca++ on the saturable binding of (3H)dihydromorphine and (3H)naloxone to particulate fractions obtained from rat brain tissues were studied in vitro. In 50mM Tris-HCl buffer (pH 7.4), Na+ decreased the maximal binding (Bmax) and also the affinity of saturable binding sites for dihyromorphine in thalamus/hypothalamus and in whole brain minus cerebellum regions. K+ decreased the affinity for dihydromorphine with a minimal effect on the Bmax. NaCl, at 50mM, increased the affinity binding sites for naloxone. With 100 and 150mM NaCl, however, the increase in affinity was not apparent. Present data indicate that the Na+ induced increase in opiate antagonist binding is primarily due to an increased affinity and is not the result of the unmasking of new binding sites. Na+ induced increases in affinity of saturable binding sites for naloxone are complex and not apparent at high Na+ concentration presumably due to an

ionic effect of Na+ which is shared by many cations. The present data also support the hypothesis that there are two qualitatively different saturable binding sites for naloxone in rat brain tissue. 13 references. (Author abstract)

000181 Leonard, B. E. Pharmacology Department, University College, Galway, Ireland **Drug-induced changes in brain tyrosine hydroxylase activity in vivo.** Neuropharmacology (Oxford). 16(1):47-52, 1977.

The hypothesis that drugs affecting catecholamine receptors directly or indirectly affect the activity of tyrosine hydroxylase by a feedback mechanism was studied in Wistar male rats. A maximal rise in brain DOPA concentration was found to occur about 30 min after injection of the dopa decarboxylase inhibitor 3-hydroxybenzylhydrazine (NSD-1015), and thus all animals were decapitated 30 min after administration. Reserpine + NSD elevated the concentration of dopa, with a peak being reached at 3 to 4 hr, while alpha-methyl-p-tyrosine + NSD reduced dopa concentration by inhibiting tyrosine hydroxylase. Apomorphine and various amphetamine derivatives (D-amphetamine, p-bromomethylamphetamine, p-chloroamphetamine, dimethoxymethylamphetamine) when given with NSD-1015 decreased the accumulation of DOPA. Chlorpromazine, haloperidol, and clozapine all increased DOPA concentration when given with NSD-1015, while piribedil + NSD had no effect. Adrenergic receptor antagonists and antidepressants (phenoxybenzamine, practolol, propranolol, imipramine, Org GB94, iprindol) had no effect on DOPA concentrations when given with NSD-1015. Diazepam and chlordiazepoxide given with NSD-1015 caused decreased DOPA levels, indicating inhibition of tyrosine hydroxylase, while phenobarbital + NSD had no effect. It is concluded that a dopamine receptor mediated feedback may play a contributory role in the control of brain tyrosine hydroxylase activity in vivo. 22 references.

000182 Leppik, Ilo E.; Sherwin, Allan L. Department of Neurology, St. Paul Ramsey Hospital, St. Paul, MN 55101 **Anticonvulsant activity of phenobarbital and phenytoin in combination.** Journal of Pharmacology and Experimental Therapeutics. 200(3):570-575, 1977.

The mechanism by which phenobarbital and phenytoin appear to be more effective when administered in combination to the rat was examined by relating response in the maximal electroshock seizure test to brain concentration of the two anticonvulsant compounds. Total brain anticonvulsant drug concentrations required to abolish the hindlimb extensor component of maximal electroshock seizure were similar when these drugs were employed singly or in combinations. The median effective brain concentrations (EC50) were: phenobarbital, 12.2micromol/kg; phenytoin, 12.3micromol/kg; and phenobarbital plus phenytoin, 14.8micromol/kr. Brain plasma concentration ratios were not affected by concomitant administration of the other agent. Brain and plasma concentrations of phenytoin relative to the dose employed were significantly higher when phenobarbital was administered concurrently than when phenytoin was given alone. This resulted in an apparent potentiation of anticonvulsant activity at 2 hr when these drugs were administered simultaneously. The anticonvulsant activity of the two combinations could be accounted for by the sum of the concentrations of the individual drugs in brain. 18 references. (Author abstract modified)

000183 Lewander, Tommy; Joh, Tong Hyub; Reis, Donald J. Psychiatric Research Center, Ulleraker Hospital, S-75017 Uppala, Sweden **Tyrosine hydroxylase: delayed activation in central noradrenergic neurons and induction in adrenal medulla elicited by stimulation of central cholinergic receptors.** Journal of Pharmacology and Experimental Therapeutics. 200(3):523-534, 1977.

The centrally active muscarinic agonist, oxotremorine, elicited an up to 2 fold dose dependent increase in the activity of tyrosine hydroxylase (TH) in the rat nucleus locus coeruleus (LC) and adrenal medulla. The response occurred in LC after 24 to 48 hr and in adrenal medulla 4 to 8 hr, peaked in LC at 72 hr and adrenal medulla at 16 to 24 hr and persisted up to 2 wk in both tissues. In brain the effect appeared confined to cell bodies of noradrenergic neurons. The activity of dopamine beta-hydroxylase increased in adrenal medulla (40%) but not in brain. Immunotitration with anti-TH serum demonstrated that the increase of TH activity in LC is due to increased catalytic activity (activation), whereas in adrenal medulla it is due to a transynaptically mediated accumulation of enzyme protein (induction). Physostigmine, pilocarpine, and nicotine increased TH activity in LC and adrenal. It is concluded that stimulation of central cholinergic receptors of the muscarinic type results in a delayed and protracted activation of TH but not of dopamine beta-hydroxylase in cell bodies of central noradrenergic neurons, and reflexly, to transynaptic induction of TH and dopamine beta-hydroxylase in the adrenal medulla. (Author abstract modified)

000184 Lewis, P. D.; Patel, A. J.; Bendek, G.; Balazs, R. Dept. of Histopathology, Royal Postgraduate Medical School, Hammersmith Hospital, London W12 OHS, England **Effect of reserpine on cell proliferation in the developing rat brain: a quantitative histological study.** Brain Research (Amsterdam). 129(2):299-308, 1977.

To determine the effect of reserpine, a CNS depressant which depletes central monoamine stores, on cell proliferation the the devloping rat brain, 11-day-old rats were injected with resperine (2.5mg/kg) and the rate of (3H)thymidine incorporation into brain deoxyribonucleic acid (DNA) was followed over a period of 36 h. In the forebrain this was significantly depressed by 2 h, and it reached a nadir of about 30% of the control level at 4 h, at which it remained for another 26 h. A partial recovery occurred by 36 h. The effect was less pronounced in the cerebellum. On the basis of this information brains of rats were examined histologically and by autoradiography between 7 and 36 h after reserpine to obtain estimates of cell cycle parameters and of rates of cell proliferation and cell loss. In the forebrain lateral ventricular subependymal layer the labeling index was markedly reduced in comparison with controls. Cell cycle time was prolonged by 50% and turnover time increased by 60%. In the cerebellar external granular layer, the mitotic index was reduced and increased numbers of degenerate postmitotic nuclei were found, notably in the latter part of the experimental period. These effects are potentially of functional and clinical significance. 15 references. (Author abstract)

000185 Linseman, Mary Ann. Addiction Research Foundation, Toronto, Canada **Naloxone-precipitated withdrawal as a function of the morphine-naloxone interval.** Psychopharmacology (Berlin). 54(2):159-164, 1977.

The possibility that different withdrawal symptoms may be preeminent when naloxone is administered at different times after the last morphine administration in chronically addicted rats was investigated. Withdrawal was precipitated by naloxone at different intervals, up to 22.5h, following a last maintenance injection, and different symptoms were preeminant following different intervals. Locomotor activity, jumping, and

writhing were precipitated most frequently at shorter intervals, while teeth chattering, wet dog shakes, ptosis, diarrhea, penile ejaculation, and hypothermia occurred at longer intervals. Others, including hostility, rhinnorhea, and lacrimation, did not change in frequency. This order closely resembed that in which symptoms occurred as a result of withdrawal abstinence alone, although they were advanced in time. Results are discussed in relation to previous reports of naloxone precipitated withdrawal and their implications for a general theory of morphine withdrawal. 13 references. (Author abstract modified)

000186 Loscher, W.; Frey, H.-H. Lab. fur Pharmk. u. Toxikologie, Fachbereich Veterinarmed., Freie Universitat Berlin, D-1000 Berlin 33, Germany **Effect of convulsant and anticonvulsant agents on level and metabolism of gamma-aminobutyric acid in mouse brain.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 296(3):263-269, 1977.

The effect of the convulsant agents pentetrazole, picrotoxin, bicuculline, strychnine and isoniazid on the central level of gamma-aminobutyric acid (GABA) and the activity of the enzymes glutamate decarboxylase (GAD) and GABA-alpha-oxoglutarate aminotransferase (GABA-T) from mice brain was studied in vivo and in vitro. In vivo, convulsant doses of picrotoxin and isoniazid lowered the level of GABA and the activity of GAD, whereas strychnine and bicuculline had no such effect. Pentetrazole inhibited GAD, but did not alter the GABA content. In vitro, all convulsants, except bicuculline inhibited the activity of GAD; however, the concentrations of strychnine were far beyond the range that is reached in vivo by convulsant doses. Only isoniazid inhibited the activity of GABA-T in vivo as well as in vitro. Phenobarbital, ethosuximide and trimethadione were about equally active in preventing convulsions induced by strychnine and picrotoxin, whereas diazepam was 9 times, and sodium valproate 3.5times more active against convulsions elicited by picrotoxin. Phenytoin up to 100mg/kg was ineffective against all chemoconvulsants. Diazepam, sodium valproate, ethosuximide and trimethadione antagonized the inhibition of GAD and the decrease in GABA concentrations caused by isoniazid. Phenobarbital and phenytoin prevented the decrease of GABA but did not reverse the inhibition of GAD. The results suggest a role played by the transmitter pool of GABA in the convulsant action of chemoconvulsants and in the anticonvulsant effect of antiepileptics clinically used in petit mal epilepsy. 36 references. (Author abstract)

000187 Lundgren, Gosta; Karlen, Bo; Holmstedt, Bo. Department of Toxicology, Swedish Medical Research Council, Karolinska Institutet, Fack, S-10401 Stockholm, Sweden **Acetylcholine and choline in mouse brain -- influence of peripherally acting cholinergic drugs.** Biochemical Pharmacology (Oxford). 26(17):1607-1612, 1977.

The effects of muscarinic drugs on levels of choline (Ch) in brain and blood and on levels and turnover of acetylcholine (ACh) in brain were studied in mice by means of a pulse injection of 2H6-Ch and analysis of Ch and ACh by mass fragmentography. Oxotremorine (OT) increased the levels of Ch and ACh and reduced the turnover of ACh. Muscarine, which is supposed not to penetrate into brain increased Ch but not ACh levels and reduced ACh turnover. Methylatropine had no effect by itself but when given before OT it abolished the increase in blood Ch and counteracted the OT effect on levels and turnover of ACh. The results demonstrate, that the concentration of ACh does not solely regulate its turnover and that apart from the central actions of OT its peripheral actions play an important role for the turnover of ACh and levels of ACh and Ch in brain. 12 references. (Author abstract)

000188 Maayani, Saul; Egozi, Yaakov; Pinchasi, Irit; Sokolovsky, Mordechai. Department of Biochemistry, George S. Wise Center for Life Sciences, Tel-Aviv University, Tel-Aviv, Israel **On the interaction of drugs with the cholinergic nervous system -- IV. Tolerance to oxotremorine in mice: in vivo and in vitro studies.** Biochemical Pharmacology (Oxford). 26(18):1681-1687, 1977.

A new procedure was used to follow continuously and simultaneously four systemic effects induced by oxotremorine in mice: salivation, tremor, hypothermia and those measured in the rotarod test. Using an equipotent dose of methoxotremorine, it was found that apart from salivation, the other systemic effects are centrally originated. By comparing the complete dose/response curves for these systemic effects in naive and tolerant mice, it was found that: 1) salivation is the most sensitive effect in naive mice; 2) all curves shift in parallel to the right on continuous exposure to oxotremorine, in a manner that seems to be dose dependent; and 3) the tolerance to oxotremorine is reversible. Since oxotremorine tolerant mice were found to be crosstolerant to various tertiary anticholinesterase agents and cholinergic agonists, the involvement of the muscarinic receptor in the tolerance to oxotremorine was investigated, using two different approaches. Continuous blockade of the receptor by scopolamine in vivo prevented tolerance development to oxotremorine; this effect was found to depend on the time of scopolamine administration relative to oxotremorine injection, and on the systemic effect measured. The amount of receptor and its affinity towards a specific ligand were determined in vitro; no significant differences were found between naive and oxotremorine tolerant animals. The significance of these results in the elucidation of possible mechanisms is discussed. 36 references. (Author abstract)

000189 Malick, Jeffrey B.; Doren, Eleanor; Barnett, Allen. Biomedical Research Department, Pharmacology Section, ICI United States Inc., Wilmington, DE 19897 **Quipazine-induced head-twitch in mice.** Pharmacology Biochemistry and Behavior. 6(3):325-329, 1977.

Quipazine, a direct serotonin receptor agonist, produced head twitch in mice similar to that produced by the serotonin precursor, 5-hydroxytryptophan (5-HTP). Three antiserotonergic drugs (methiothepin, methysergide, and cinanserin) antagonized both the 5-HTP and quipazine induced head twitch responses. In addition, the quipazine response was significantly potentiated by a monoamine oxidase (MAO) inhibitor, pargyline. Since it is not likely that quipazine itself is metabolized by MAO, these results suggested that quipazine might cause release of endogenous serotonin. Parachlorophenylalanine, a serotonin depletor, significantly antagonized the potentiation of quipazine by the MAO inhibitor but failed to antagonize the head twitch produced by quipazine itself. The present studies suggest that quipazine influences serotonin receptors in the brain to produce head twitch by two mechanisms of action: 1) by direct serotonin receptor activation; and 2) indirectly by causing a release of endogenous serotonin. 25 references. (Author abstract)

000190 Mandell, Arnold J. Department of Psychiatry, University of California at San Diego, La Jolla, CA 92093 **Some old and new theories in biochemical psychiatry.** In: Gershon, E., The impact of biology on modern psychiatry. New York, Plenum, 1977. 276 p. (p. 165-178).

In a paper presented at a symposium on the impact of biology on modern psychiatry conducted to honor the 80th anniversary of the Jerusalem Mental Health Center Ezrath Nashim in Jerusalem, Israel, in December 1975, various theories in biochemical psychiatry are reviewed with emphasis on some of the effects of lithium on the serotonergic system in the rat brain and the potential implications of this knowledge for a model explaining lithium's symmetrical prophylactic actions against both mania and depression patients with bipolar affective disease. Among the topics discussed are: 1) erroneous concepts in biochemical psychiatry such as those relating to the term depletion as applied to the effects of reserpine on transmitter systems; 2) theories associating aberrant metabolites with psychiatric disorders; 3) theories of relationships between psychopathological states and deviations in peripheral hormones and neurotransmitter metabolites; and 4) problems associated with using the effects of various drugs on animal biogenic amine neurons as a model for explaining their effects on human behavior and/or human psychopathology. Studies have indicated that lithium significantly increases the high affinity uptake of radiolabeled tryptophan into rat brain synaptosomes. After 3 weeks of repeated daily lithium chloride injections, the activity of intraneuronal tryptophan hydroxylase is decreased, tryptophan uptake is increased, and serotonin (5-hydroxytryptamine, 5-HT) synthesis returns to control levels. This last measure reflects a buffered steady state in which the ability of cocaine to inhibit the tryptophan uptake system and increase tryptophan hydroxylase within the neurons is inhibited. It is suggested that this interaction of lithium and the 5-HT biosynthetic system can explain the symmetrical prophylactic effects of this drug in patients with bipolar affective disorders. 31 references.

000191 Mandell, Arnold J.; Knapp, Suzanne. Dept. of Psychiatry, University of California at San Diego, La Jolla, CA **Evidence for multiphasic presynaptic adaptation: studies with cocaine and lithium.** Psychopharmacology Bulletin. 13(1):40-42, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, a study of the interaction between cocaine and lithium on the serotonergic system in the rat brain is reported. Subcutaneously administered cocaine alone reduced the high affinity uptake of radiolabeled tryptophan, reduced the capacity of striatal synaptosomes to convert tryptophan to serotonin (5-hydroxytryptamine, 5-HT), increased tryptophan hydroxylase activity in the 5-HT cell bodies of the lateral midbrain and in the nerve terminals in the striate cortex to which they project. Lithium alone stimulated radioactive tryptophan uptake, increased the conversion of tryptophan to 5-HT, and decreased tryptophan hydroxylase activity in both midbrain and striate cortex. When cocaine was administered to animals pretreated with lithium for three days, the uptake of tryptophan, the conversion of tryptophan to 5-HT, and tryptophan hydroxylase activity approached control values. It is concluded that demonstration of the neurobiological antagonism between cocaine and lithium provides partial confirmation of the action of each drug. It is speculated that lithium may act by buffering the serotonergic system against extreme shifts in transmission but that more research is necessary to confirm this speculation. 6 references.

000192 Mao, C. C.; Marco, E.; Revuelta, A.; Bertilsson, L.; Costa, E. Laboratory of Preclinical Pharmacology, NIMH, St. Elizabeth's Hospital, Washington, DC 20032 **The turnover rate of gamma-aminobutyric acid in the nuclei of telencephalon: implications in the pharmacology of antipsychotics and of a minor tranquilizer.** Biological Psychiatry. 12(3):359-371, 1977.

Turnover rate of gamma-aminobutyric acid (GABA) in telencephalic nuclei was studied in relation to the action of antipsychotics and a minor tranquilizer. Turnover rate was measured in the substantia nigra, globus pallidus, N. accumbens, and striatum of rats injected with muscimol, a potent GABA agonist, and diazepam. Similarity of action of the two drugs supports the theory that diazepam acts as a GABA-mimetic drug. Haloperidol and clozapine affect GABA turnover differently in different nuclei. Haloperidol decreases GABA turnover in caudate, but does not affect it in substantia nigra, whereas clozapine increases it in both areas. Both drugs accelerate GABA turnover in globus pallidus and N. accumbens. It is suggested that an increase of GABA turnover and perhaps of GABA release in striatum and substantia nigra may account for the lack of tardive dyskinesia and extrapyramidal side-effects of clozapine. 62 references. (Author abstract modified)

000193 Marietta, Michael P.; Way, Walter L.; Castagnoli, Neal, Jr.; Trevor, Anthony J. no address **On the pharmacology of the ketamine enantiomorphs in the rat.** Journal of Pharmacology and Experimental Therapeutics. 202(1):157-165, 1977.

Four pharmacologic effects (hypnosis, ataxia, locomotor activity and lethality), brain and plasma pharmacokinetic profiles and the in vitro hepatic metabolism of racemic ketamine and its two optical isomers were studied in male, Sprague-Dawley rats. At equimolar doses, the (+) isomer elicited periods of hypnosis and ataxia nearly twice those of the (-) isomer. No significant differences were observed between the brain and plasma levels of either the individual isomers or the racemate after equimolar administration (30mg/kg). Observed differences in the rates of the in vitro hepatic metabolism of the enantiomorphs did not appear to play an important role in the in vivo disposition of the isomers. From correlations between brain levels and pharmacological activities, and estimation of ED50 values (hypnosis), differences in the hypnotic potencies of the isomers appeared to have a pharmacodynamic rather than a pharmacokinetic basis. The results suggest that the (+) isomer may provide anesthesia which is safer and has fewer posthypnotic side-effects when administered at dosages equihypnotic to those of racemic ketamine or its (-) isomer. 27 references. (Author abstract)

000194 Martin, Billy R.; Dewey, William L.; Harris, Louis S.; Beckner, Jacqueline S. Department of Pharmacology, Medical College of Virginia, Richmond, VA 23298 **3H-Delta9-tetrahydrocannabinol distribution in pregnant dogs and their fetuses.** Research Communications in Chemical Pathology and Pharmacology. 17(3):457-470, 1977.

To characterize distribution of labelled delta9-tetrahydrocannabinol (THC) in maternal and fetal brain, pregnant dogs were administered intravenously 0.5mg/kg of 3 labelled THC and sacrificed at 30 minutes, the time of peak behavioral effects, and distribution of radioactivity in mothers and fetuses was quantified in many peripheral tissues and in major brain areas by sample combustion and liquid scintillation spectrometry. Brains were subfractionated by differential centrifugation in order to compare the subcellular localization of radioactivity in maternal and fetal brains. Although the level of radioactivity in maternal brain was three times higher than that in fetal brain, the distribution of radioactivity in the major brain areas was similar in mothers and fetuses. However, the subcellular distribution of radioactivity in whole brain homogenate of fetal dogs was markedly different from that in whole brain

homogenates from others and appeared to be related directly to differing phospholipid content. 24 references. (Author abstract modified)

000195 Martinez, T. T.; McNeill, J. H. Div. of Pharmacology and Toxicology, University of British Columbia, Vancouver, B.C. V6T 1W5, Canada **Cyclic AMP and the positive intropic effect of norepinephrine and phenylephrine.** Canadian Journal of Physiology and Pharmacology (Ottawa). 55(2):279-287, 1977.

The effect of norepinephrine and phenylephrine on myocardial cyclic adenosine 3,5-monophosphate (AMP) levels in rats was studied. Time response studies of the effects of norepinephrine and phenylephrine revealed that both agonists caused an increase in cyclic AMP levels before increases in contractile force in either the electrically stimulated left atria or spontaneously beating right atria of the rat. Norepinephrine caused a nearly sixfold increase in cyclic AMP, whereas phenylephrine produced only a 50% increase in the nucleotide. Pretreatment with reserpine did not affect the norepinephrine cyclic AMP response; however, the phenylephrine cyclic AMP response was abolished. Reserpine pretreatment did not significantly affect the contractile responses of either amine. In the presence of propranolol, norepinephrine was found to have the ability to produce an increase in contractile force in which cyclic AMP was apparently not involved. The time course of the contractile response induced by adrenergic amines was found to be remarkably influenced by the chronotropic response in spontaneously beating preparations while the cyclic AMP response was not greatly affected. This difference in the contractile response may be due to the ability of the chronotropic response to influence the flux of calcium through the cell membrane. 51 references. (Author abstract modified)

000196 Matthews, William D.; Connor, John D. Smith, Kline & French Laboratories, Philadelphia, PA 19101 **Actions of iontophoretic phenytoin and medazepam on hippocampal neurons.** Journal of Pharmacology and Experimental Therapeutics. 201(3):613-621, 1977.

The effects of administering phenytoin (DPH) and medazepam (MDZ) iontophoretically to discharging pyramidal and granule cells in rats anesthetized with methoxyflurane were studied to determine if these anticonvulsant agents exert direct effects on the rates of discharge of hippocampal neurons, whether similarities exist between responses elicited by DPH and MDZ, and whether pyramidal and granule cells differ in their responses to the drugs. DPH reduced the firing rates of 38% of spontaneously active neurons. The incidence of depression by DPH increased with the pretest discharge rate of the cell. MDZ depressed 79% of spontaneous firing neurons regardless of the pretest discharge rate. A majority of neurons whose firing rates were facilitated by either acetylcholine or glutamate were depressed by DPH or MDZ ejected iontophoretically. Pyrimidal and granule cells responded similarly to putative transmitters, but differentially to the drug. 30 references. (Journal abstract modified)

000197 Meltzer, H. Y.; Fessler, R. G.; Fang, V. S. Department of Psychiatry, University of Chicago, Pritzker School of Medicine, 950 E. 59th Street, Chicago, IL 60637 **Perlapine: relationship between stimulation of prolactin secretion and antipsychotic activity.** Psychopharmacology (Berlin). 54(2):183-186, 1977.

The relationship between stimulation of prolactin secretion and antipsychotic activity in rats treated with perlapine, a dibenzohetereopine compound chemically related to clothiapine, loxapine, and clozapine, was investigated. Although the latter three compounds are antipsychotic, perlapine has not been reported to display such properties despite the fact that the four drugs all increased rat plasma prolactin levels. The order of potency is loxapine, perlapine, clothiapine, and clozapine. These results suggested that either perlapine should be reexamined for antipsychotic properties or there are unsuspected discrepancies between the dopamine receptors relevant to antipsychotic activity in man and those that regulate prolactin secretion in the rat. 29 references. (Author abstract modified)

000198 Menon, M. K.; Clark, W. G.; Masuoka, D. T. Psychopharmacology Research Laboratory, Veterans Administration Hospital, Sepulveda, CA 91343 **Possible involvement of the central dopaminergic system in the antireserpine effect of LSD.** Psychopharmacology (Berlin). 52(3):291-297, 1977.

The possible involvement of the central dopaminergic system in the antireserpine effect of d-lysergic acid diethylamide (LSD) was studied in mice. LSD was more potent and longer acting than apomorphine (APO) in producing hyperactivity in reserpine treated mice. 2-Brom LSD and quipazine were ineffective in reversing reserpine sedation. Treatments with phenoxybenzamine and methysergide failed to block the stimulant effects of LSD or APO, demonstrating the noninvolvement of serotonin or norepinephrine receptors in their action. The ineffectiveness of alpha-methyl-para-tyrosine (MPT) in modifying the stimulant effects of LSD and APO indicated a probable direct stimulant effect on dopamine (DA) receptors. Low doses of chlorpromazine, haloperidol, or pimozide blocked the effects of APO but only reduced the effects of LSD. APO reduced the MPT induced depletion of DA in the whole brain, but LSD did not. It was postulated that APO acts as a direct DA receptor agonist, and that LSD may act directly on a site structurally closely related to DA receptor. Repeated treatment with LSD did not lead to development of tolerance to its locomotor effects in reserpinized mice. Mescaline and psilocybin failed to produce LSD like effects in reserpine treated mice. The effects of LSD on DA or a related site probably are not solely responsible for its psychotomimetic effects. 60 references. (Author abstract modified)

000199 Mergner, T.; Pompeiano, O. Istituto di Fisiologia Umana, Cattedra II, Universita di Pisa, Pisa, Italy **Activity of vestibulo-oculomotor neurones during saccadic eye movements induced by reserpine.** Brain Research (Amsterdam). 127(2):362-363, 1977.

The activity of vestibulooculomotor neurones during saccadic eye movements induced by reserpine in the cat, was discussed in a paper presented at the 8th Annual Meeting of the European Brain and Behaviour Society held in Copenhagne, August 1976. Vestibulooculomotor neurones, excited monosynaptically or disynaptically by stimulation of the ipsilateral labyrinth and antidromically by stimulation of the ascending MLF, showed bursts of unit discharge preceding the quick contraction of the contralateral LR muscle and abrupt cessation of nerve impulses during relaxation of this muscle associated with contraction of the ipsilateral LR muscle. Other vestibular units showed quick excitation during contraction of the ipsilateral LR muscle and inhibition during contraction of the contralateral one. The electrical activity of axons from the region of the VI nucleus, close to antidromically identified abducens motoneurones showed changes in unit discharge synchronous with the field potentials recorded from that nucleus during the eye movement (EM). Similar findings were obtained during the individual EM which appeared at regular intervals in chronic reserpinized cat, as well as during the

bursts of saccadic EM which appeared in the same preparations after additional administration of anticholinesterase (eserine sulphate). Therefore rhythmic changes in unit discharge of vestibulooculomotor neurones contribute to both isolated and clustered EM induced by injection in the same animal of reserpine and eserine, respectively. It is postulated that a decreased availability of monoamines as well as an increased availability of acetylcholine produced by these substances trigger a pontine generator which activates the vestibular nuclei. (Author abstract modified)

000200 Messiha, F. S.; Larson, J. W.; Geller, I. Department of Pharmacology and Therapeutics, Texas Tech University School of Medicine, Lubbock, TX 79409 **Voluntary ethanol drinking by the rat: effects of 2-aminoethylisothiouronium salt, a modifier of NAD:NADH and noreleagnine a beta-carboline derivative.** Pharmacology (Basel). 15(5):400-406, 1977.

To elucidate the mechanisms of voluntary ethanol intake (ETOH), the effects of 2-aminoethylisothiouronium salt (AET), an agent reported to alter NAD/NADH ratios in rat liver, and of noreleagnine (NLG), a beta-carboline derivative reported to inhibit monoamine oxidase, were examined in the rat. ETOH was decreased in rats administered AET. Repeated administration of same dose of AET to ETOH naive rats produced a significant inhibition of liver aldehyde dehydrogenase. Ethanol intake was decreased in rats given NLG. Repeated administration of NLG exerted a significant inhibitory effect on liver alcohol dehydrogenase activity. It is concluded that the observed reduction of ethanol under AET which inhibits liver aldehyde dehydrogenase may reflect an antabuse like reaction and the reduction of ethanol intake under NLG may be due, in part, to a buildup of alcohol in the blood and brain through inhibition of ethanol metabolism. The results are discussed in reference to the possible mechanism of action underlying voluntary intake of ethanol in rats, implicating alteration of NAD/NADH ratios in the biochemical processes underlying alcohol intake of rats. 11 references. (Author abstract modified)

000201 Misra, A. L.; Vadlamani, N. L.; Pontani, R. B. New York State Office of Drug Abuse Services, Testing and Research Laboratory, 80 Hanson Place, Brooklyn, NY 11217 **Differential effects of opiates on the incorporation of (14C) thiamine in the central nervous system of the rat.** Experientia (Basel). 33(3):372-374, 1977.

Opiate agonist (morphine), pure antagonist (naloxone), mixed agonist/antagonist (nalorphine) and analgesically inactive enantiomorph (dextrorphan) produced differential stereoselective effects on the incorporation of 14C labeled thiamine in the central nervous system of the rats. Thiamine and its phosphorylated esters appear to play an important biophysical role in nerve conduction and excitation at the molecular level, quite independently of their well known coenzymatic activity in the decarboxylation of alpha-keto acids and 2 transketolation steps of the pentose phosphate pathway. 18 references. (Author abstract).

000202 Modigh, Kjell; Svensson, Torgny H. Farmakologiska institutionen, Goteborgs universitet, Fack, S-400 33 Goteborg, Sweden /**Antidepressive effects on central catecholamine receptors.**/ Olika antidepressiva behandlingars effekter pa centrala katekolaminreceptorer. Nordisk Psykiatrisk Tiddskrift (Kungsbacka). 30(7):512-518, 1977.

Antidepressive effects on postsynaptic catecholamine receptors were studied in mice using electroconvulsive therapy (ECT), protriptyline (Concordine) and thyroid hormone (thyroxine). Treatment with ECT, between three to seven shocks daily, resulted in increased receptor sensitivity of dopamine. The shocks precipitated an increased psychomotor action of apomorphine plus clonidine in reserpine pretreated mice. Protriptyline gave similar results but showed a shorter duration of postsynaptic effects. Protriptyline was administered in doses of 10mg/kg 1 hour after reserpine and 2 hours prior to apomorphine plus clonidine. The chronic cases were given 10mg/kg every 12 hours for 3 to 14 days. Pretreatment with thyroxine, 20 micrograms four to eight times every 12 hours, resulted in a potentiation of the psychomotor effects of apomorphine plus clonidine following treatment with reserpine. The significant effect of the combination apomorphine plus clonidine indicates that the hormone mainly increases the receptor sensitivity of noradrenaline. Thyroxine combined with tricyclic antidepressants expedite the therapeutic effect. The results support the theory of disturbed dopaminergic neurotransmission causing psychomotor impediments in cases of depression. 20 references.

000203 Mooradian, Aram; Dupont, Paul E.; Hlavac, Allan G.; Aceto, Mario D.; Pearl, Jack. Sterling-Winthrop Research Institute, Rensselaer, NY 12144 **3-aminotetrahydrocarbazoles as a new series of central nervous system agents.** Journal of Medicinal Chemistry. 20(4):487-492, 1977.

The hypothesis that 3-aminotetrahydrocarbazoles have antipsychotic central nervous system activity paralleling the tryptamine types was tested in animals. A structurally modified tryptamine, 3-dimethylamino-1,2,3,4-tetrahydrocarbazole, prevented amphetamine induced stereotyped behavior in rats and prevented reserpine induced ptosis in mice. Additional work suggested that the compound exhibited imipramine like effects on cortical evoked potentials in cats and antidepressant activity in man. Succeeding analyses of the compound and a number of substituted derviatives indicated that either imipramine type of chlorpromazine type profiles were obtainable by changing substituents and their positions. 10 references.

000204 Morgan, K. G.; Bryant, S. H. Dept. of Pharmacology, College of Medicine, University of Cincinnati, Cincinnati, OH 45267 **Pentobarbital: presynaptic effect in the squid giant synapse.** Experientia (Basel). 33(4):487-488, 1977.

The effect of pentobarbital on presynaptic function was investigated in the squid giant synapse. In concentrations that produced synaptic blockade sodium pentobarbital produced a dose related, reversible decrease of the calcium spike of the presynaptic terminal. 21 references. (Journal abstract modified)

000205 Mottram, D. R.; Wadhwani, D. Dept. of Pharmacology, School of Pharmacy, Liverpool Polytechnic, Liverpool L3 3AF, England **The sympathomimetic activity of fenfluramine hydrochloride on rat vas deferens.** British Journal of Pharmacology (London). 59(4):615-620, 1977.

The anorexigenic agent fenfluramine HCl was applied to isolated vas deferentia of male rats to characterize its mode of action of peripheral noradrenergic nerve terminals. Characteristic spiked contractions were observed after exposure to fenfluramine. Pretreatment of vasa with the indirectly acting sympathomimetic amine, tyramine, greatly reduced both the height and rate of contraction induced by fenfluramine. Large concentrations of the uptake inhibitor, desipramine, reduced the height and rate of contraction produced by fenfluramine when administered prior to fenfluramine or at the height of the fenfluramine induced contractions. Pretreatment with debrisoquine reduced the contractions in response to fenfluramine over a period of time. Intraperitoneal injection of rats

with reserpine 24 h to 48 h prior to testing abolished the effects of fenfluramine. It is concluded that fenfluramine acts as an indirectly acting sympathomimetic amine on peripheral adrenergic nerve terminals. 16 references. (Author abstract modified)

000206 Muraki, Takamura; Tokunaga, Yukiko. Department of Pharmacology, School of Medicine, Keio University, Shinanomachi, Shinjuku-ku, Tokyo 160, Japan **Inhibitory effect of morphine on serum gonadotropins and prolactin of proestrous rats.** Japanese Journal of Pharmacology (Kyoto). 27(3):461-462, 1977.

To determine changes of serum gonadotropins and prolactin levels in rats when ovulation is blocked by morphine, rats were given morphine hydrochloride or saline at 1355 hours on the day of proestrus, decapitated at 1800 hours, and hormones were then determined using radioimmunoassay. Administration of morphine decreased the serum levels of lutenizing hormones (LH), follicle stimulating hormones (FSH), and prolactin, although the decrease in FSH levels was not significant. While morphine blocked the later afternoon rise in serum LH, FSH, and prolactin of proestrous rats, the possibility that morphine merely delayed the rise in hormones cannot be excluded. Results suggest the possibility that morphine blocks ovulation by inhibiting the preovulatory LH surge. 8 references.

000207 Neckers, L. M.; Biggio, G.; Moja, E.; Meek, J. L. Laboratory of Preclinical Pharmacology, NIMH, St. Elizabeths Hospital, William A. White Building, Washington, DC 20032 **Modulation of brain tryptophan hydroxylase activity by brain tryptophan content.** Journal of Pharmacology and Experimental Therapeutics. 201(1):110-116, 1977.

Tryptophan hydroxylase (TPH) and tryptophan (TP) in several brain nuclei and other regions of rat brain were studied after treatments known to lower brain TP levels. Chlorimipramine, loading with neutral amino acids and a TP deficient diet decreased the TP content of some, but not all, brain regions studied. Whenever TP content was decreased, TPH activity increased. Increased TPH activity appeared to be related to an increase in V(MAX) and could be prevented by blocking the TP decrease with TP injections. Several brain nuclei accumulate TP at different rates after a TP load. These data suggest possible mechanisms for regulation of serotonin synthesis in the face of fluctuating plasma levels of TP. 15 references. (Journal abstract modified)

000208 O'Neill, Patrick J.; Rahwan, Ralf G. Division of Pharmacology, College of Pharmacy, The Ohio State University, Columbus, OH 43210 **Absence of formation of brain salsolinol in ethanol-dependent mice.** Journal of Pharmacology and Experimental Therapeutics. 200(2):306-313, 1977.

The brains of alcohol dependent mice were analyzed for salsolinol, the acetaldehyde/dopamine tetrahydroisoquinoline (TIQ), to determine whether in vivo TIQ formation would occur in brains of ethanol dependent animals in the absence of specific experimental manipulations, and their role, if any, in the development of physical dependence. Mice were subjected to ethanol vapors for 6 days (14mg/l in inspired air on day 1, increasing to 20 to 30mg/l on day 6), and were then either evaluated for withdrawal convulsions on handling or sacrificed and their brains analyzed for salsolinol. No evidence could be obtained for in vivo formation of salsolinol in individual whole brains, pooled whole brains or dopamine rich areas of pooled brains obtained from ethanol dependent mice, even under conditions where blood ethanol levels reached 7mg/ml. In view of the low pharmacological potency of salsolinol, it seems unlikely that this alkaloid plays a significant role in the effects of ethanol in mice. 28 references. (Author abstract modified)

000209 Okamoto, K.; Quastel, J. H. Dept. of Pharmacology, National Defence Medical College, Tokorozawa-City, Saitama-Prefecture, Japan **Effects of N-methylamino acids and convulsants on spontaneous action potentials in guinea-pig cerebellar slices.** British Journal of Pharmacology (London). 59(4):551-560, 1977.

The antagonism by picrotoxin and/or strychnine of the effects of N-methyl-gamma-aminobutyrate (N-methylGABA), N-methylglycine, N-methyltaurine, and N-methyl-beta-alanine on the frequency of spontaneous spike discharges in guinea-pig cerebellar tissue slices was examined in order to determine whether the specific antagonism of glycine, taurine, and beta-alanine by strychnine and the specific antagonism of GABA by picrotoxin is maintained when the parent molecules are modified by N-methylation. It was found that: 1) the methylated amino acids diminished the frequency of spontaneous spike discharges but a weak excitatory effect usually preceded the inhibition; 2) both picrotoxin and strychnine competitively antagonized or suppressed the inhibitory effects of N-methyl GABA, N-methyl-beta-alanine, and N-methyltaurine; and 3) only strychnine suppressed the inhibitory action of N-methyglycine. N-methyl-DL-glutamate produced a strong inhibition followed by a strong excitation of the neurons. Both picrotoxin and strychnine suppressed the inhibitory effect but not the excitatory effect. Kinetic analyses revealed that the N-methylated compounds have different affinities for their receptor sites than do the corresponding nonmethylated amino acids. It is posited that the inhibitory effects of the N-methylated compounds are antagonized by both picrotoxin and strychnine in a manner different from that exerted with the parent compounds. The results are discussed in terms of receptor specificity for the N-methylated amino acids and/or their antagonists. 12 references. (Author abstract modified)

000210 Okey, Allan B.; Bondy, Gregory P. Department of Biology, University of Windsor, Windsor, Ontario N9B 3P4, Canada **Is delta9-tetrahydrocannabinol estrogenic?.** Science. 195(4281):904-905, 1977.

The claim that delta9-tetrahydrocannabinol (THC) is estrogenic is countered by experimental evidence in response to a study by J. Solomon, M. A. Cocchia, R. Gray, D. Shattuck, and A. Vossmer (Science 192, 559, 1976). Oral administration of cannabis resin (containing THC) produced dose related decreases rather than increases in uterine weight in ovariectomized adult female rats and in prepubertal female rats. Futher, cannabis resin and THC did not compete with an estrogen for estrogen receptor sites. It is suggested that attention should now be focused on alternative mechanisms by which cannabinoids might cause reproductive pathologies, for it is unlikely that the demasculinizing and/or feminizing effects of cannabis are due to simple estrogen like action. 14 references.

000211 Orensanz Munoz, L. M.; DeFeudis, F. V.; Fando, J. L. Ramon y Cajal Center and Autonomous Medical School, Madrid, Spain **High-affinity binding of 3H-glycine and 14C-beta-alanine to synaptosomal-mitochondrial fractions of rat CNS regions; effects of strychnine.** Neuropharmacology (Oxford). 16(7/8):537-540, 1977.

The effects of strychnine on high affinity binding of 3H-glycine and 14C-beta-alanine to synaptosomal mitochondrial fractions of rat CNS regions were investigated. High affinity binding of glycine and beta-alanine was demonstrated to have occurred to synaptosomal mitochondrial fractions of five re-

gions of rat CNS. Strychnine inhibited the binding of beta-alanine to a greater extent than that of glycine to particles of cerebral cortex, midbrain, pons, and medulla, but not to those of spinal cord. The greater potency of strychnine on beta-alanine than on glycine binding in CNS regions examined indicates that beta-alanine mediated inhibitory processes, as well as those for glycine, might underlie the convulsant action of strychnine and that some distinct sites exist for the binding of each of these amino acids. Results support the contention that beta-alanine may be an inhibitory transmitter in the vertebrate CNS. 11 references. (Author abstract modified)

000212 Overstreet, David H.; Helps, Steven C.; Prescott, Ann M.; Schiller, Grant D. School of Biological Sciences, Flinders University of South Australia, Bedford Park 5042, South Australia **Development and disappearance of subsensitivity to pilocarpine following a single administration of the irreversible anticholinesterase agent, DFP.** Psychopharmacology (Berlin). 52(3):263-269, 1977.

The development and disappearance of subsensitivity to pilocarpine following a single administration of the irreversible anticholinesterase agents, diisopropyl fluorophosphate (DFP) were studied in rats. Rats were trained to drink from experimental drinking chambers and pilocarpine hydrochloride was injected 5 min before the drinking session. One week later DFP or the arachis oil vehicle (1mg/kg) was injected intramuscularly and injections of pilocarpine were given at varying times thereafter. The suppression of water intake by this dose of pilocarpine was unaffected by pretreatment with arachis oil, but was markedly attenuated by pretreatment with DFP. This subsensitivity was first observed on the second day but had largely disappeared by the 14th day. DFP was found to have comparable effects on water intake and brain acetylcholinesterase activity when the injections were separated by 20 days. In a second experiment the hypothermic effects of pilocarpine were found to be reduced in rats acutely treated with DFP. These data establish that subsensitivity to pilocarpine occurs following a single administration of DFP. This subsensitivity could reflect a reduced sensitivity of postsynaptic receptors to acetylcholine, which may partially account for the behavioral recovery of the rats while acetycholinesterase activity is still markedly depressed. 25 references. (Author abstract modified)

000213 Page, J. G.; West, L. E. Lilly Research Laboratories, Greenfield, IN **Hypothermia in rats produced by nabilone, a synthetic cannabinoid.** Pharmacology (Basel). 15(3):233-241, 1977.

The factors involved in nabilone induced hypothermia in rats and in the development of tolerance to the hypothermic effects of this synthetic cannabinoid drug are investigated. The magnitude of nabilone induced hypothermia was dependent on ambient temperature, route of administration, and dosing interval. The hypothermic response was not significantly altered by differences in age, sex, or nutritional status of the animals tested. The rapidity with which tolerance to the hypothermic effects of the drug developed was dependent on the route of administration. Crosstolerance was demonstrated between the hypothermic effects of nabilone and delta9-tetrahydrocannabinol suggesting that these compounds act in a similar way to produce hypothermia. 9 references. (Author abstract modified)

000214 Palmer, G. C.; Jones, D. J.; Medina, M. A.; Stavinoha, W. B. Dept. of Pharmacology, University of South Alabama, College of Medicine, Mobile, AL 36688 **Influence of injected psychoactive drugs on cyclic AMP levels in mouse brain and lung following microwave irradiation.** Neurophamacology (Oxford). 16(6):435-443, 1977.

The effects of various psychoactive drugs on the adenosine cyclic 3',5'-monophosphate (cAMP) levels in the brain and lungs of mice sacrificed by microwave irradiation were investigated. In the cerebral cortex, chlorpromazine, chlorpromazine sulfoxide, para-hydroxyamphetamine, caffeine, papaverine, pargyline, and amitriptyline increased cAMP; alpha-methyl-paratyrosine decreased cAMP; and reserpine elicited no change. In the diencephalon, reserpine, chlorpromazine, and caffeine elevated cAMP; alpha-methyl-paratyrosine and chlorpromazine sulfoxide decreased cAMP; and the remainder of the drugs had no effect. In pulmonary tissue, reserpine, alpha-methyl-paratyrosine, papaverine, chlorpromazine, chlorprozaine sulfoxide, and amitriptyline increased cAMP, while amphetamine, para-hydroxyamphetamine, pargyline, and D-lysergic acid diethylamide decreased cAMP. These findings indicate that in vivo, psychoactive drugs may influence steady state levels of cAMP in a manner that can differ from their action in vitro. It is also concluded that the same drug may not affect the cyclic nucleotide levels in an identical manner in different regions of the brain or in the lung. 65 references. (Author abstract modified)

000215 Parry, G. J. G. Department of Medicine, University of Otago Medical School, Dunedin, New Zealand **Concentration of clonazepam in serum and cerebrospinal fluid of the sheep.** Pharmacology (Basel). 15(4):318-323, 1977.

To characterize the passage of clonazepam into the cerebral spinal fluid (CSP) of the sheep, serum and SCF levels of clonazepam were assessed in 12 sheep receiving 1, 2, or 4mg clonazepam. There was a wide variation in serum concentration and at least 2mg clonazepam was necessary to obtain recommended therapeutic concentration. The pharmacokinetic profile of clonazepam in sheep resembles that in man in that it describes a 2 compartment model. However, the half time of elimination is much shorter than in man but is similar to that of dogs. The large volume of distribution indicates tissue binding of the drug. The unbound fraction of clonazepam passes rapidly and freely into the central nervous system. This finding is consistent with the clinical evidence that clonazepam suppresses convulsive activity within 1 min of intravenous administration in man. The binding of clonazepam to serum proteins was directly proportional to the total concentration over the wide range of concentrations measured. 9 references. (Author abstract modified)

000216 Patel, A. J.; Bendek, G.; Balazs, R.; Lewis, P. D. MRC Developmental Neurobiology Unit, Carlshalton, Surrey SM5 4EF, England **Effect of reserpine on cell proliferation in the developing rat brain: a biochemical study.** Brain Research (Amsterdam). 129(2):283-297, 1977.

To determine the effects of reserpine, a CNS depressant which depletes central monoamine stores, on cell proliferation in the developing rat brain, 11-day-old rats were subcutaneously injected with reserpine. Reserpine was found to produce a severe depression in cell proliferation in terms of the rate of (3H)thymidine incorporation into deoxyribonucleic acid (DNA). The effect was studied in detail 12 h after the administration of the drug when the rate of in vivo DNA synthesis in the forebrain was about one third of control: the decrease was less marked in the cerebellum (rate about two thirds of control). It was possible to exclude side-effects of the drug, such as restricted food intake, hypothermia and an elevation of the level of blood corticosteroids being responsible for the reduc-

tion of (3H)thymidine incorporation into DNA. Kinetic studies showed that reserpine had no marked effect on the entry of (3H)thymidine from blood to brain, but it caused some retardation in the rate of (3H)thymidine conversion into (3H)thymidine nucleotides. Nevertheless, the severe depression of DNA labeling was evident even after correcting the values on the basis of (3H)thymidine nucleotide concentrations. In contrast to these effects, thymidine kinase activity was normal in the brain of reserpine treated animals. 53 references. (Author abstract)

000217 Patrick, R. L.; Barchas, J. D. Stanford University School of Medicine, Stanford, CA 94305 **Potentiation by cocaine of the stimulus-induced increase in dopamine synthesis in rat brain striatal synaptosomes.** Neuropharmacology (Oxford). 16(5):327-332, 1977.

A possible function of dopamine, after reuptake into the neurone, to modulate the extent of synthesis stimulation produced by depolarization, was investigated in rats. Rat brain striatal synaptosomes responded to short-term exposure to depolarizing concentrations of veratridine with an increase in the rate of dopamine synthesis. This increase is potentiated by concentrations of cocaine (1-100micro or benztropine (10 micro) which significantly inhibit dopamine uptake. In addition, the subsequent inhibition of dopamine synthesis that occurs during prolonged exposure to veratridine is markedly antagonized by cocaine. At a higher concentration (1mM), cocaine caused a 45% inhibition of synthesis, and completely blocked the veratridine induced synthesis stimulation. These results suggest that following depolarization newly released dopamine may play a role in regulating its own synthesis rate by a process involving neuronal reuptake and that this regulation can be significantly altered by agents, such as cocaine, which can inhibit dopamine reuptake. 18 references. (Author abstract modified)

000218 Paul, C. J.; Whitehouse, L. W. Drug Research Labs. Health Protection Branch, Health and Welfare Canada, Ottawa, Ontario K1A OL2 Canada **Metabolic basis for the supra-additive effect of the ethanol-diazepam combination in mice.** British Journal of Pharmacology (London). 69(1):83-90, 1977.

To determine if a biochemical basis for the additive effects of ethanol plus diazepam could be established in mice, the effect of ethanol, administered 30 min before radiolabeled diazepam, on the pharmacokinetics of diazepam was examined. Pretreatment with ethanol: 1) elevated blood concentrations of radioactivity at 4 h, 6 h, 8 h, and 12 h after administration; 2) elevated concentrations of radioactivity in several organs and tissues; 3) reduced the amount of radioactivity recovered in the bile; and 4) reduced the levels of oxazepam and increased the levels of desmethyl diazepam (the major metabolites recovered in bile and/or plasma and brain), suggesting that the 3-hydroxylation of desmethyl diazepam is inhibited by ethanol. Performance on the rotacone was significantly impaired for up to 6 hr by the ethanol/diazepam combination, whereas neither drug alone altered performance in this test of motor coordination. It is suggested that the accumulation of the pharmacologically active metabolite desmethyl diazepam in the brains of ethanol pretreated mice may be responsible for the additive effect of the ethanol/diazepam combination on motor coordination. 26 references. (Author abstract modified)

000219 Peroutka, S. J.; U'Prichard, D. C.; Greenberg, D. A.; Snyder, S. H. Dept. of Pharmacology, Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Neuroleptic drug interactions with norepinephrine alpha receptor binding sites in rat brain.** Neuropharmacology (Oxford). 16(9):549-556, 1977.

The interaction of various neuroleptic drugs with norepinephrine alpha receptor binding sites in the rat brain was examined. Alpha adrenergic receptor sites in mammalian brain tissue were labeled by the binding of (3H)WB-4101 (2-(2',6'-dimethoxy) phenoxyethylamino) methyl benzodioxan), a potent alpha-adrenergic antagonist. The tested drugs were of phenothiazine, butyrophenone and thioxanthene classes. The potencies of neuroleptics in competing for WB-4101 binding sites correlated closely with their potencies in antagonizing norepinephrine and epinephrine induced lethality in rats, confirming that affinity for WB-4101 binding sites predicts alpha-receptor antagonism in vivo. The relative affinities of neuroleptics for WB-4101 binding sites and for dopamine receptors as labeled by (3H)haloperidol provides an index of the relative propensities of these drugs for eliciting autonomic side-effects such as orthostatic hypotension and sedation. 25 references. (Journal abstract modified)

000220 Pert, Agu; Simantov, Rabi; Synder, Solomon H. Adult Psychiatry Branch, NIMH, Bethesda, MD 20014 **A morphine-like factor in mammalian brain: analgesic activity in rats.** Brain Research (Amsterdam). 136(3):523-533, 1977.

Evidence is presented that a partially purified morphine like peptide 'enkephalin' (PPE), extracted from bovine brain, elicited pronounced apparent analgesia after injection into the periaqueductal grey matter of rat brain. This analgesis was reversed by the opiate antagonist naloxone in a dose dependent manner. Analgesia was more rapid in onset and much shorter in duration after PPE than after morphine administration and was elicited only by those ion exhcnage column fractions of PPE that compete for opiate receptor binding. No analgesis occurred when PPE or morphine injections were administered at a site 2 mm lateral to the periaqueductal grey matter. The potencies of synthetic methionine and leucine enkephalin in eliciting analgesia were less than 1% of those of partially purified enkephalin extracts when doses of equivalent ability to compete for opiate receptor binding were compared. 31 references.

000221 Peters, David, A. V.; Tang, Shun. Department of Pharmacology Faculty of Medicine, University of Ottawa, Ottawa, Ontario, Canada **Persistent effects of repeated injections of D-lysergic acid diethylamide on rat brain 5-hydroxytryptamine and 5-hydroxyindoleacetic acid levels.** Biochemical Pharmacology. 26(11):1085-1086, 1977.

The persistent effects of repeated injections of D-lysergic acid diethylamide (LSD) on rat brain 5-hydroxytryptamine (5-HT) and 5-hydroxyindoleacetic acid (5-HIAA) levels were studied by measuring concentrations in six brain regions: cerebellum, cortex, midbrain, pons medulla, striatum, and the remainder of the brain. Two weeks after the last of 14 daily LSD injections (100micrograms/kg) there was a significant increased 5-HT level in both midbrain and cerebral cortex without a change in 5-HIAA; no changes occurred in the other regions. The data suggest that biochemical effects of repeated LSD injections occur well after the final drug treatment. Rats given daily LSD injections for 4 weeks and killed 24 hr after the 1st injection showed a much smaller decrease in midbrain 5-HIAA than previously reported 24 hr after the last of 14 daily injections of a smaller dose of LSD (20micrograms/kg) suggesting tolerance to the effects of LSD with long-term treatment. In the 4 week experiment, there was a small but statistically significant increase in midbrain 5-HT, but the only

brain region in which LSD had a marked effect was the cerebellum; the increase in 5-HIAA and the decrease in 5-HT were consistent with an increased 5-HT turnover in this region. 20 references.

000222 Petersen, Dennis R.; Collins, Allan C.; Deitrich, Richard A. Institute for Behavioral Genetics, University of Colorado, Boulder, CO 80309 **Role of liver cytosolic aldehyde dehydrogenase isozymes in control of blood acetaldehyde concentrations.** Journal of Pharmacology and Experimental Therapeutics. 201(2):471-481, 1977.

The role of various cytosolic aldehyde dehydrogenase (ALDH) isozymes in acetaldehyde metabolism was determined in rats of known genotype (RR, reactor; rr, nonreactor) with respect to induction of a cytosolic enzyme by phenobarbital. Animals were treated with either phenobarbital or 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) prior to ethanol treatment. TCDD treatment is known to induce a second cytosolic ALDH isozyme in both RR and rr animals. Phenobarbital increased cytosolic ALDH activity 23 fold only in the RR animals, while TCDD increased activity 155 fold in both groups. Phenobarbital treated RR rats maintained significantly lower blood acetaldehyde levels at 30, 90 and 150 minutes after ethanol injection compared to control RR animals. Blood acetaldehyde levels in phenobarbital treated rr rats were not significantly different from rr controls. Administration of TCDD to RR or rr rats did not significantly alter blood acetaldehyde levels at 30, 90 or 150 minutes after ethanol treatment compared to appropriate controls. Similarly, phenobarbital significantly increased blood ethanol elimination rate (1.5times greater than control) only in RR rats. Ethanol elimination rate was not significantly altered by TCDD in either group. Pargyline did not significantly inhibit cytosolic ALDH activity, while total mitochondrial ALDH activity was inhibited by 28 and 57% in RR animals receiving TCDD and phenobarbital, respectively. Pargyline significantly increased blood acetaldehyde levels after ethanol administration. However, pretreatment with phenobarbital or TCDD significantly decreased elevated blood acetaldehyde levels resulting from pargyline treatment, with the greatest reduction in the phenobarbital treated RR animals. It was concluded that acetaldehyde oxidation lies in the mitochondria and most likely involves the matrix enzyme. 32 references. (Author abstract)

000223 Pickworth, W. B.; Sharpe, L. G.; Martin, W. R. National Institute on Drug Abuse, Division of Research, Addiction Research Center, Lexington, KY **Transcallosally evoked potentials and the EEG in the decerebrate dog: actions of tryptaminergic, dopaminergic and adrenergic agonists.** Electroencephalography and Clinical Neurophysiology (Amsterdam). 42(6):809-816, 1977.

Changes in the transcallosally evoked potential (TEP) produced by intravenous infusion of various tryptaminergic, dopaminergic, and adrenergic agonists as determined in studies with midpontine decerebrate dogs immobilized with gallamine are discussed. A total of 50 TEPs recorded from the gyrus ectolateralis was computer analyzed before, during and after administration of the drugs. Changes in the TEP were also correlated with changes in the electroencephalogram (EEG). LSD significantly depressed the TEP, and the effect persisted for at least 80 minutes. DMT caused a significant and reversible increase in the amplitude of the TEP. Lysergic acid (LSD) and dimethyltryptamine (DMT) reduced the alpha activity of the EEG and enhanced the amplitude of the low frequency waves. DMT produced a significant and LSD produced a marginal increase in electrogenesis. Tryptamine, mescaline, methoxamine, and apomorphine had no significant effect of the TEP or EEG. Results suggest that depression of the TEP is unrelated to spinal reflex facilitation in the dog or hallucinogenic activity in man. 34 references. (Author abstract modified)

000224 Pinchasi, Irit; Maayani, Saul; Sokolovsky, Mordechai. Department of Biochemistry, George S. Wise Center for Life Sciences, Tel-Aviv University, Tel-Aviv, Israel **On the interaction of drugs with the cholinergic nervous system -- III. Tolerance to phencyclidine derivatives: in vivo and in vitro studies.** Biochemical Pharmacology (Oxford). 26(18):1671-1679, 1977.

A possible contribution of metabolic processes to the tolerance to cyclohexamine (1-(1-phenylcyclohexyl) ethylamine) was investigated by determining the kinetics of mouse brain and liver uptake of the labeled drug. A similar time course was found for both naive and tolerant mice. In addition, the amount of the drug uptaken by the brain was found to be linearly dependent on the dose injected in both groups. The possibility of adaptive changes in brain enzymes was investigated using mouse brain acetylcholinesterase (AcChE, E.C.3.1.1.7) as a model of a putative enzyme, affected by phencyclidine derivatives. Although brain AcChE is believed to be chronically affected by these drugs in vivo, no measurable changes could be observed in the amount, the affinity towards diverse ligands or the kinetic properties of this enzyme, between naive, cyclohexamine tolerant and physostigmine tolerant mice. 62 references. (Author abstract)

000225 Poffenbarger, M.; Fuller, G. M. Dept. of Human Biological Chemistry and Genetics, University of Texas Medical Branch, Galveston, TX 77550 **Effects of psychotropic drugs on neurotubule assembly.** Journal of Neurochemistry (Oxford). 28:1167-1174, 1977.

The interaction of psychotropic drugs with bovine brain microtubules was assessed by viscometry, by Colchicine binding studies, and by neurite growth in neuroblastoma cells in tissue culture. Of the thirteen drugs tested, only d-amphetamine, chlorpromazine and reserpine inhibited the in vitro repolymerization of microtubules. However, the maximal drug effects observed in these studies occurred at concentrations in excess of the pharmacologically therapeutic range. These results suggest: 1) the affinity of these drugs for tubulin appears to be similar to, but clearly less than, that observed for Colchicine; 2) the toxic side-effects of these drugs may be mediated, in part, by the microtubule system; 3) these drugs may inhibit microtubule assembly by disrupting secondary processes rather than by a direct interaction with tubulin. 37 references. (Journal abstract)

000226 Polc, P.; Haefely, W. Pharmaceutical Research Dept., F. Hoffmann-La Roche, CH-4002 Basel, Switzerland **Effects of systemic muscimol and GABA in the spinal cord and superior cervical ganglion of the cat.** Experientia (Basel). 33(6):809, 1977.

In a paper presented at the 9th annual meeting of the Union of Swiss Societies of Experimental Biology in Zurich, April 1977, the effects of muscimol and GABA on spinal cord in spinal cats and their action on autonomic ganglion cells in the superior cervical ganglion (SCG) were examined. Muscimol produced a long-lasting depolarization of primary afferent endings and segmental dorsal root potentials; monosynaptic and polysynaptic reflexes were depressed. Motoneurones were slightly hyperpolarized as indicated by recordings from ventral rootlets; GABA produced similar results but was about 1% as potent as muscimol. Bicuculline reduced the effects of

muscimol and GABA on spinal cord and SCG. It is concluded that the effects of the two GABA receptors stimulants differ from those of agents enhancing GABAergic transmission, such as the benzodiazepines.

000227 Potter, David E.; Moratinos, Julio; Ellis, Sydney. Department of Pharmacology and Toxicology, University of Texas Medical Branch, Galveston, TX 77550 **Metabolic responses to isoproterenol and epinephrine in the rabbit: influence of state of nourishment, alloxan diabetes and pretreatment with propranolol.** Biochemical Pharmacology. 26(11):1065-1069, 1977.

The influence of the state of nourishment, alloxan diabetes, and pretreatment with propranolol (PRO) on the metabolic responses to isoproterenol (ISO) and epinephrine (EP) was studied in rabbits. Responses in plasma glucose, lactate, and glycerol to ISO and EP were compared in fed normal, fasted normal, and fed alloxan diabetic rabbits. Changes in the state of nourishment had more effect on the plasma glucose response to EP than to ISO; however, the hyperglycemic response to ISO was augmented by chemical destruction of pancreatic beta cells, whereas the peak response to EP was unchanged. The lactate and glycerol responses to EP and ISO were not drastically different in the experimental and control animals. Pretreatment with PRO in fed normal rabbits suppressed the rise in lactate and glycerol induced by EP and ISO, inhibited the rise in glucose by ISO only 50% and did not affect the rise in glucose produced by EP. The results suggest that the hyperglycemic response to EP is primarily a result of hepatic glycogen breakdown whereas the response to ISO is largely dependent on gluconeogenic mechanisms. Thus catecholamines may influence the responsiveness of pancreatic islet cells which in turn alters the disposition of key metabolic substrates. 19 references. (Author abstract modified)

000228 Pryor, G. T.; Husain, S.; Mitoma, C. Stanford Research Institute, Menlo Park, CA 94025 **Influence of fasting on the absorption and effects of delta9-tetrahydrocannabinol after oral administration in sesame oil.** Pharmacology Biochemistry and Behavior. 6(3):331-341, 1977.

In a study on the influence of fasting on the absorption and effects of delta9-tetrahydrocannabinol, tissue levels were higher 2 hr after oral administration of 3H delta9-THC (10mg/kg in sesame oil) to male Fischer rats in the morning compared with treatment in the afternoon, and a corresponding reduction in potency was seen for the impairing effect of delta9-THC on performance of a conditioned avoidance response (CAR). The hypothesis that these effects were related to the interval between feeding (which normally occurs during the night in the nocturnal rat) and drug administration was supported when they were mimicked in overnight fasted and ad lib fed rats. Food deprivation decreased the rate of gastrointestinal absorption of 14C delta9-THC in sesame oil. Peak plasma levels of 14C occurred 2 to 4 hr after administration in fed rats compared with 8 hr in fasted rats. When tested 2 hr after oral administration, delta9-THC caused significantly greater impairment of CAR performance in fed than fasted rats, whereas the opposite was found after 8 hr. Extraction and subsequent thin layer chromatography of plasma and brain from fed and fasted rats sacrificed 2 or 8 hr after oral administration of 10mg/kg 14C delta9-THC showed that brain levels of 11-hydroxy-delta9-THC rather than delta9-THC were correlated with the behavioral effect. 21 references. (Author abstract)

000229 Puig, Margarita M.; Gascon, Pedro; Musacchio, Jose M. Department of Pharmacology, New York University Medical Center, 550 First Avenue, New York, NY 10016 **Endorphin release: cross tolerance to morphine.** European Journal of Pharmacology (Amsterdam). 45(2):205-206, 1977.

To demonstrate cross tolerance between the electrically induced release of endorphins and morphine, the inhibitory response in myenteric plexus-longitudinal muscle (MPLM) preparations from naive and morphine tolerant/dependent guinea-pigs following electrical stimulation in the presence or absence of naloxone was assessed. Strips obtained from morphine treated animals showed a reduced sensitivity to the inhibitory effects of stimulation at 10Hz, while responses obtained in the presence of naloxone were not significantly different from that obtained in naive animals. Results clearly demonstrate that there is a significant difference in the endorphine mediated inhibitory response obtained from naive and tolerant animals. Results strongly suggest that exogenous opiates can produce a marked tolerance to endorphins released by field stimulation. 5 references.

000230 Quayle, E. S.; Pagel, J.; Monti, J. A.; Christian, S. T. Dept. of Neurology, Univ. of Alabama in Birmingham, Medical Center, University Station, Birmingham, AL 35294 **Specific serotonin binding and adenylate cyclase stimulation: a correlative study using isolated synaptosomal membranes from mature rat brain.** Alabama Journal of Medical Sciences. 14(3):259-263, 1977.

Using the equilibrium dialysis technique and isolated synaptosomal membranes from mature rat brain, the identification of four distinct Types (No. 1, No. 2, No. 3, No. 4) of specific, high affinity 5-hydroxytryptamine (5-HT) binding sites with KD's of 2.6x10-9M, and 7.0x10-9M, and 4.6x10-8M, respectively, is reported. Two of these (No. 2 and No. 3) are in agreement with sites already reported in the literature. Cyclic AMP production was found to be stimulated by 5-HT with four maximal rates of formation (picomoles/min/mg protein). The same 5-HT concentrations are those producing saturation of specific 5-HT binding at Type No. 1 through Type No. 4 sites respectively. The effects of 1-methadone (1x10-5M) on 5-HT binding and cyclic AMP formation indicate that Type No. 3 sites might be involved in the presynaptic 'reuptake' process, while studies with indomethacin (1x10-5M) suggest a prostaglandin linkage between neurotransmitter binding sites and the adenylate cyclase molecules intracellularly. 27 references. (Author abstract modified)

000231 Quock, Raymond M. Department of Physiology-Pharmacology, School of Pharmacy, University of the Pacific, Stockton, CA 95211 **The potentiating effect of naloxone upon apomorphine-induced hyperthermia.** Life Sciences (Oxford). 20(12):2005-2011, 1977.

The potentiating effect of naloxone upon apomorphine drug effect was investigated by intravenous or intracerebroventricular pretreatment of rabbits with the narcotic antagonist naloxone. The pretreatment significantly enhanced the magnitude of hyperthermic response to the dopaminergic agonist apomorphine. Naoxone did not potentiate the hyperthermic action of either amphetamine or lysergic acid diethylamide. Apomorphine induced hyperthermia was sensitive to antagonism by haloperidol, cyproheptadine, and parachlorophenylalanine. In rabbits pretreated with any of these antagonists, administration of naloxone 5 min prior to apomorphine challenge restored the hyperthermic effect. Increasing apomorphine dosage also surmounted the antagonism. It is concluded that naloxone exerts a potentiating influence upon apomorphine drug effect in naive

rabbits, as well as in rabbits pretreated with antagonists of apomorphine induced hyperthermia. (Author abstract modified)

000232 Randrup, A.; Braestrup, C. St. Hans Mental Hospital, Dept. E, DK-4000 Roskilde, Denmark **Uptake inhibition of biogenic amines by newer antidepressant drugs: relevance to the dopamine hypothesis of depression.** Psychopharmacology (Berlin). 53(3):309-314, 1977.

The dopamine theory of depression was studied by assessing the effect of antidepressant drugs on uptake of dopamine, noradrenaline, and serotonin in synaptosomes from rat brain. Five newer drugs -- butriptyline, maprotiline, trimipramine, iprindole, and mianserine -- exhibited rather potent inhibition of 3H-dopamine uptake in corpus striatum. The five drugs were weak, compared to chlorimipramine, on 14C-serotonin uptake in the whole forebrain. Butriptyline, trimipramine, and iprindole were very weak uptake inhibitors of 3H-noradrenaline in the occipital cortex. These results are discussed in relation to comprehensive recent literature as further indicating a link between dopamine and depression. 76 references. (Author abstract modified)

000233 Ravitz, A. J.; Moore, K. E. Dept. of Pharmacology, Michigan State University, East Lansing, MI 48824 **Lack of effect of chronic haloperidol administration on the prolactin-lowering actions of piribedil.** Journal of Pharmacy and Pharmacology (London). 29(6):384-386, 1977.

To determine whether supersensitivity to the prolactin lowering effects of piribedil, a direct acting dopamine (DA) agonist, occurs after chronic DA receptor blockade by haloperidol, rats were pretreated with alpha-methyltyrosine 30 min before being injected with piribedil to increase circulating prolactin concentrations. Piribedil caused a dose related reversal of the alpha-methyltyrosine induced elevation of serum prolactin concentrations. Prior chronic treatment with haloperidol did not alter this response. It is concluded that chronic treatment with haloperidol does not induce supersensitivity to the prolactin lowering effects of piribedil. It is suggested that the DA receptors that mediate the inhibition of prolactin secretion differ from those of the mesolimbic and nigrostriatal systems which mediate locomotor and stereotyped activity in the development of supersensitivity after chronic blockade. 21 references.

000234 Ravitz, A. J.; Moore, K. E. Department of Pharmacology, Michigan State University, East Lansing, MI 48824 **Effects of amphetamine, methylphenidate and cocaine on serum prolactin concentrations in the male rat.** Life Sciences (Oxford). 21(2):267-272, 1977.

The effects of d-amphetamine, methylphenidate, and cocaine on serum prolactin levels in the male rat were investigated. These three substances, postulated to release or block the reuptake of released dopamine at nerve terminals in the brain, produced only slight reductions in the serum concentrations of prolactin in normal male rats or in rats in which the prolactin concentrations were elevated by pretreatment with alpha-methyltyrosine. Results suggest that indirect dopaminergic drugs, such as d-amphetamine, do not facilitate the release of dopamine from the terminals of tuberoinfundibular neurons in the same way as they do at the terminals of other dopaminergic neurons in the brain. 16 references. (Author abstract modified)

000235 Rehavi, Moshe; Maayani, Saul; Sokolovsky, Mordechai. Department of Biochemistry, George S. Wise Center of Life Sciences, Tel-Aviv University, Tel-Aviv, Israel **Tricyclic antidepressants as antimuscarinic drugs: in vivo and in vitro studies.** Biochemical Pharmacology (Oxford). 26(17):1559-1567, 1977.

The antagonistic activity of nortriptyline, amitriptyline and imipramine to the hypothermic and tremorgenic activity of oxotremorine was determined in mice in vivo and in vitro. The peripheral anticholinergic relative potencies of these drugs were evaluated by following the dose dependent time profiles of their mydriatic activity. The binding constants of the antidepressant agent toward the central muscarinic receptor from the mouse whole brain homogenate were determined in vitro, and could be correlated with the ED50 values found for the three drugs' in vivo responses. The three antidepressants tested were found to be 100 fold less active than scopolamine. Their anticholinesterase activity towards the enzyme in whole mouse brain homogenate was found to be too low to make any possible contribution to their activity in vivo. The relationships between structure and function and the possible contribution of their antimuscarinic property to the observed in vivo effects are discussed. 30 references. (Author abstract)

000236 Reimers, Hans-Joachim; Allen, David J.; Cazenave, Jean-Pierre; Feuerstein, Irwin A.; Mustard, J. Fraser. Department of Pathology, McMaster University, Hamilton, Ontario, Canada **Serotonin transport and storage in rabbit blood platelets -- the effects of reserpine and imipramine.** Biochemical Pharmacology (Oxford). 26(18):1645-1655, 1977.

To provide quantitative data on the effects of reserpine and imipramine on serotonin transport across the amine storage organelle membrane, serotonin transport and storage in suspensions of washed rabbit platelets were investigated by following the exchange of platelet bound (3H)serotonin and (14C)serotonin added to the suspending medium. Reserpine reduced the storage organelle serotonin content by inhbiting the transfer of serotonin from the cytoplasm into the amine storage organelles. It also reduced the fraction of serotonin in the cytoplasm transferred per unit of time into the suspending medium. Imipramine inhibited the uptake of serotonin across the platelet plasma membrane into the cytoplasm and reduced the fraction of cytoplasmic serotonin transferred per unit of time into the suspending medium. At this concentration it had no effect on serotonin transport across the amine storage organelle membrane in either direction. The method used allows for determining the effects of drugs that interfere with transport and storage of biogenic amines and in defining the defects in diseases with abnormal transport or storage of biogenic amines. 80 references. (Author abstract modified)

000237 Reimers, Hans-Joachim; Kinlough-Rathbone, Raelene L.; Packham, Marian A.; Mustard, J. Fraser. Department of Pathology, McMaster University, Hamilton, Ontario, Canada **Effects of reserpine and serotonin on adenine nucleotide metabolism and glucose oxidation of washed rabbit platelets.** Biochemical Pharmacology (Oxford). 26(18):1667-1670, 1977.

Possible effects of reserpine on the energy metabolism of intact rabbit platelets were examined to determine whether such effects could explian the reduced transfer of metabolic adenosine triphosphate (ATP) into the releasable pool of ATP. Reserpine caused a small increase in (14C)hypoxanthine and (14C)inosine accumulation in a suspension of washed rabbit platelets prelabeled with (14C)adenosine or (14C)adenine. Reserpine also caused increased oxidation of (14C)glucose. Serotonin mimicked these effects of reserpine, and imipramine inhibited the serotonin induced as well as the reserpine induced increases in (14C)hypoxanthine and (14C)inosine forma-

tion and glucose oxidation. However, imipramine did not prevent the reserpine induced inhibition of (14C)APT transfer from the metabolically active pool into the releasable pool. It is concluded that the effects of reserpine on energy metabolism are at least partially attributable to the increased demand for energy for the uptake of serotonin, liberated from the platelets during incubation with reserpine, and not to uncoupling of oxidative phosphorylation. 23 references. (Author abstract)

000238 Reimers, Hans-Joachim; Packham, Marian A.; Cazenave, Jean-Pierre; Mustard, J. Fraser. Department of Pathology, McMaster University, Hamilton, Ontario, Canada **Effect of reserpine on adenosine uptake and metabolism, and subcellular transport of platelet adenosine triphosphate in washed rabbit platelets.** Biochemical Pharmacology (Oxford). 26(18):1657-1665, 1977.

To determine if reserpine also inhibits the uptake of adenine nucleotides from the cytoplasm into the storage organelles of rabbit platelets, transport of adenine nucleotides from the metabolically active pool into the releasable amine storage granule pool was followed by labeling the metabolically active pool of adenine nucleotides by incubating the platelets with (14C)adenosine or (14C)adenine. Reserpine decreased the rate of adenosine triphosphate (ATP) transport into the storage granules by about 50%. Platelets obrained from rabbits that had received 5mg/kg of reserpine intraperitoneally 18 hr prior to the collection of blood released less ATP and ADP than control platelets from animals that had not received any drugs. This was not due to inhibition of the release reaction by reserpine. Since reserpine reduces the amount of adenine nucleotides in the storage granules, it is concluded that if it affects the rate of efflux of adenine nucleotides from the granules at all, this effect must be slight compared with the inhibition of the uptake into the granules. 37 references. (Author abstract modified)

000239 Renis, Marcella; Giovine, Angelo; Bertolino, Antonio. Laboratory of Biochemistry and Neuropathology, Mental Hospital 'Casa Divina Provvidenza', I-70052 Bisceglie, Italy **MAO activity in rat brain stem and cerebral cortex following acute and chronic treatment with L-dopa and ethanol + L-dopa.** Pharmacology (Basel). 15(5):392-399, 1977.

A series of studies was undertaken to examine the effects of acute and chronic administration of L-dopa and ethanol + L-dopa on MAO activity in rat brainstem and cerebral cortex using noradrenaline (NA), dopamine (DA), serotonin (5-HT) and tryptamine (Try) as substrates. The results obtained clearly demonstrate that acute and chronic treatment affects MAO activities in the two brain areas examined in opposite ways. Moreover, the two treatments show different effects both according to the substrate used, and, especially in the case of NA and Try, according to the brain area examined. Results indicate that acute ethanol + L-dopa increase MAO-dopamine and MAO-5-hydroxytryptamine activities in the same manner as acute ethanol and tetrahydropapaveroline administration, whereas MAO-Try is decreased and MAO-noradrenaline is increased only after L-dopa treatment. These differing results make it seem doubtful that the two substrates are physiologically specific for MAO type A. 47 references. (Author abstract modified)

000240 Reubi, J.-C.; Iversen, L.-L.; Jessell, T. M. MRC Neurochemical Pharmacology Unit, Department of Pharmacology, Medical School, Hill Road, Cambridge, England **Dopamine selectively increases 3H-GABA release from slices of rat substantia nigra in vitro.** Nature (London). 268(5621):652-653, 1977.

To determine whether the presynaptic dopamine receptors in substantia nigra are associated with substance P or GABA containing axon terminals, the effects of dopamine on the release of substance P and GABA from superfused slices of rat substantia nigra in vitro were investigated. Results show that dopamine stimulates selectively the release of 3H-GABA from nerve terminals in substantia nigra. The lack of effect of dopamine on substance P release suggests that the dopamine sensitive adenylate cyclase in rat substantia nigra may be localised predominantly in GABA containing axon terminals.

000241 Richelson, Elliott. Department of Psychiatry, Mayo Foundation, Rochester, MN 55901 **Antipsychotics block muscarinic acetylcholine receptor-mediated cyclic GMP formation in cultured mouse neuroblastoma cells.** Nature (London). No. 5600:371-373, 1977.

The blocking effect of antipsychotics on muscarinic acetylcholine receptor mediated cyclic guanosine monophosphate (GMP) formation was studied in cultured mouse neuroblastoma cells. Using a biological assay for the muscarinic acetylcholine receptor, it was shown that antipsychotics competitively block this receptor, thereby blocking muscarinic receptor mediated formation of cyclic GMP. It is suggested that in vivo, antipsychotics block both acetylcholine stimulated guanylate cyclase activity and dopamine stimulated adenylate cyclase activity. Effects of antipsychotics on receptor mediated formation of both cyclic GMP and adenosine monophosphate may relate to the therapeutic effects as well as the side-effects of these compounds. 14 references.

000242 Rising, P. A.; Illing, H. P. A.; Johnson, P.; Yeomans, M. A. Hoechst Pharmaceutical Research Laboratories, Walton Manor, Walton, Milton Keynes MK7 7AJ, England **The metabolism of a substituted aminoacetamidobenzophenone and cyclization to the corresponding benzodiazepine in the rat in vivo.** Xenobiotica (London). 7(7):425-437, 1977.

To quantitatively and qualitatively analyze the ability of the rat to cyclize 2-(5-cyano-N-methyl-3,5-dimethyl-3-aza-pentanamido)-5-nitrobenzophenon (C 72 0045), a sedative/hypnotic, in vivo, a series of studies were undertaken following oral administration of C 72 0045. It was found that the compound is well absorbed and extensively metabolized with only minimal quantities of parent compound detected in plasma, bile, or urine. Urinary t.l.c. metabolite profiles after oral administration of a substituted aminoacetamidobenzophenone, (14C)C 72 0045, and (14C)nimetazepam were qualitatively similar but differed quantitatively. Analysis by t.l.c. of plasma extracts obtained after oral administration of (14C)C 72 0045 demonstrated that nimetazepam and nitrazepam accounted for 20% of the plasma total radioactivity. Nimetazepam and nitrazepam had a combined concentration up to 22 times greater than the concentration of C 72 0045. The presence of nimetazepam in plasma after oral administration of C 72 0045 was confirmed by mass spectrometry. In the liver, (14C)C 72 0045 was rapidly metabolized to polar metabolites. In the same rats, the major brain metabolites were nimetazepam and nitrazepam. It is concluded that (14C)C 72 0045 undergoes metabolic cyclization in the rat to form nimetazepam, which is further metabolized to form nitrazepam. 10 references. (Author abstract modified)

000243 Robinson, R. G.; Bloom, F. E. Department of Psychiatry and Behavioral Sciences, Johns Hopkins University

School of Medicine, Baltimore, MD **Pharmacological treatment following experimental cerebral infarction: implications for understanding psychological symptoms of human stroke.** Biological Psychiatry. 12(5):669-680, 1977.

Pharmacological treatment following experimental cerebral infarction was investigated in rats to determine implications for understanding the psychological symptoms of human stroke. It was found that middle cerebral artery ligation in the rat produces decreases in catecholamine concentrations at brain sites uninjured by ischemic damage and a transient increase in spontaneous horizontal activity, and that development of this hyperactivity can be blocked by postoperative treatment with the antidepressant, desmethylimipramine, or by preoperative destruction of norepinephrine terminals with 6-hydroxydopamine. These results suggest that ischemic damage to the cerebral cortex which injures some axonal branches of elaborately arborizing catecholamine containing neurons may alter the biochemical and functional state of the entire system in its intact collateral axons as well as its injured axons. Thus the concept of stroke as a local injury producing symptoms by local structure function relationships is conceptually inadequate, and poststroke symptoms must be evaluated with these "whole brain" concepts in mind. It is suggested that the poststroke symptoms of apathy and depression may represent emotional changes which result from pathophysiological processes in catecholamine neurons far from the site of the stroke. 25 references. (Journal abstract modified)

000244 Robinson, S.; Cheney, D. L.; Moroni, F.; Costa, E. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Acetylcholine turnover in specific brain areas of rats injected with various antidepressants. (Unpublished paper).** Washington, DC, NIMH, 1977. 18 p.

Acetylcholine turnover in specific brain areas of rats injected with various antidepressants was discussed in a paper presented at the symposium on Depressive Disorders in Rome, Italy, May 1977. To clarify the action of antidepressants on cholinergic function, acetylcholine turnover rate (TRACh) following treatments with a variety of clinically effective antidepressents was measured in various areas of rat brain. Drugs studied included chlorimipramine, amitriptyline, desipramine, iprindole, nomifensine, amphetamine, and apomorphine. It was found that the antidepressants influence the TRACh of various brain areas with varying patterns. Desipramine and chlorimipramine appear to facilitate dopaminergic regulation of TRACh in hippocampus and striatum, resulting in a decrease in the TRACh in these two areas. Iprindole and nomifensine appear to facilitate the noradrenergic regulation of septal neurons and cause an increase in TRACh which can be abated by intraseptal phenoxybenzamine. Nomifensine tends to enhance TRACh in diencephalon, but an involvement of norepinephrine in this action is yet to be ascertained. Further research is suggested. 29 references.

000245 Roerig, David L.; Hasegawa, Andrew T.; Wang, Richard I. H. Research Service/151, Veterans Admin. Center, Wood, WI 53193 **Effect of alteration of metabolism on the analgesic activity, toxicity, distribution and excretion of 1-alpha-acetylmethadol in the rat.** Journal of Pharmacology and Experimental Therapeutics. 203(2):377-387, 1977.

The analgesic activity and toxicity of 1-alpha-acetylmethadol (LAAM) were studied in rats pretreated with phenobarbital (PB), an inducer of hepatic drug metabolism. It is reported that PB pretreatment increased both the AD50 and LD50 of LAAM after s.c. or p.o. administration when compared with control rats. After the administration of (3H)LAAM, lower concentrations of 3H were found in most tissue except liver in PB pretreated rats, suggesting increased elimination of LAAM or its metabolites, which was confirmed by the increased rate of urinary and fecal excretion of 3H in PB pretreated rats after (3H)LAAM administration. PB pretreatment increased the concentration of 3H in liver compared with control rats; however, much of this increase was due to an increase in the concentration of water soluble metabolites of (3H)LAAM. PB treatment also increased the biliary excretion of 3H after (3H)LAAM administration, and most of this increase was due to an increase in the biliary excretion of water soluble metabolites of LAAM. It is suggested that PB pretreatment decreased the analgesic activity of LAAM because it preferentially enhanced further metabolism of analgesically active LAAM metabolites or induced an alternate metabolic pathway for LAAM leading to analgesically inactive metabolites. 52 references. (Author abstract modified)

000246 Ross, Svante B. Research and Development Laboratories, Astra Lakemedel AB, S-15185 Sodertalje, Sweden **Potentiation by reserpine of the inhibition by amphetamine of (3H)dopamine accumulation in the rat striatum.** Journal of Pharmacy and Pharmacology (London). 29(7):433-434, 1977.

The potentiation by reserpine of the inhibitory action of amphetamine on dopamine (DA) accumulation in the rat striatum was studied. The accumulation of radiolabeled DA was significantly lower in homogenates of rat striatum from animals pretreated with reserpine 1 h or 18 h prior to testing than in homogenates from untreated rats. In contrast to the results obtained with amphetamine, cocaine (a poor releaser of DA) had identical activity in reserpinized and control preparations. It is posited that amphetamine inhibits accumulation of DA by a mechanism that differs from that of cocaine. Possible explanations for the action of amphetamine on DA accumulation and for the potentiation of the effect of amphetamine by reserpine are discussed. 14 references.

000247 Roth, L. J. Department of Pharmacological and Physiological Sciences, University of Chicago, 947 E. 58th St., Chicago, IL 60637 **Morphine in brain and ileum.** Acta Pharmacologica et Toxicologica (Kobenhavn). 41(Supplement 1):104-105, 1977.

The results of dry and wet autoradiographic studies of 3H-morphine administration and subsequent distribution in newborn and adult rat brain and ileum reported at the May 1977 Conference on Autoradiography in Pharmacology and Toxicology held in Uppsala, Sweden are summarized. In freeze dried hemisections morphine was found to be generally distributed throughout the cerebral cortex, spinal cord, medulla oblongata, and caudate nucleus; a significant localization was found in the ventromedial hypothalamic nucleus and in medial thalamic nucleus. High concentrations found in the choroid plexus and pia mater with high concentrations in the adjacent parenchyma suggest a new mode of entry of morphine into the brain through subarachnoid space. A wet autoradiographic study of guinea-pig myenteric plexus indicated specific localization of morphine on small glial satellite cells and generalized distribution on longitudinal muscle cells. Distribution of labelled enkephalin, etorphine, naloxone in the myenteric plexus was found to be similar to morphine. 3 references.

000248 Rubovits, Randi. Laboratory of Clinical Science, NIMH, Bethesda, MD **Altered receptor sensitivity following chronic drug administration in man: the tardive dyskinesia model.** Psychopharmacology Bulletin. 13(1):49-50, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, altered receptor sensitivity following chronic neuroleptic administration in humans is reviewed and a suitable animal model for studying tardive dyskinesia is discussed. It has been hypothesized that the benefit derived from a neuroleptic drug may be related to alterations in the functional organization of the nervous system which may result from an attempt by the CNS to preserve a functional homeostasis in the presence of the drug. These neuroadaptive changes may mediate both therapeutic efficacy and long-term side effects. Pharmacologically, tardive dyskinesia appears to be related to an abnormal and increased dopaminergic responsivity to dopamine (DA). Data from animal studies support the hypothesis that the chronic chemical denervation of DA receptors by neuroleptics promotes a change in the receptor function so that when normal dopaminergic input is restored the response is exaggerated. Although studies of the effects of neuroleptics on stereotyped behavior induced by dextramphetamine or apomorphine in the rat have demonstrated that chronic neuroleptic treatment produces persistent alternations in neuronal function (enhanced receptor sensitivity), it is posited that this model does not represent an adequate method for studying tardive dyskinesia because neuroleptic pretreatment alone does not cause abnormal motor behavior in the rat. It is proposed that the spontaneous dyskinesias produced by neuroleptic treatment in monkeys may be a more suitable animal model.

000249 Ruch, W.; Mixter, R. C.; Russell, R. M.; Garcia, J. F.; Gale, C. C. Regional Primate Research Center, University of Washington, Seattle, WA 98195 **Aminergic and thermoregulatory mechanisms in hypothalamic regulation of growth hormone in cats.** American Journal of Physiology. 2(1):E61-E69, 1977.

Aminergic and thermoregulatory mechanisms in hypothalmic regulation of growth hormone in cats is studied. In conscious cats intravenous infusion of L-dopa increased plasma growth hormone (GH), hydrocorticosterone (17-OHCS), and glucose while lowering midbrain temperature. Hypothalamic integration of GH release with thermoregulation is suggested. Intravenous infusion of 5-hydroxytryptophan after L-alpha-hydrazino-methyldopa raised GH and 17-OHCS. This is viewed as suggesting serotonergic mechanisms also control GH and ACTH. 60 references. (Author abstract modified)

000250 Sahgal, A.; Tye, N. C.; Iversen, S. D. Department of Psychology, University of Cambridge, Cambridge, England **Do benzodiazepines affect motor or sensory mechanisms?.** Brain Research (Amsterdam). 127(2):384, 1977.

Results of a study undertaken to determine whether benzodiazepine effects on behavior affect motor or sensory mechanisms in the pigeon were presented to the 8th Annual Meeting of the European Brain and Behaviour Society in Copenhagen, in August, 1976. Pigeons were trained on a schedule which allowed concurrent measurement of motor and sensory changes. The task involved a conditional color discrimination contingent upon the completion of a fixed interval schedule of responding. The former component measures sensory capacity and the latter, motor effects. The results indicated that the major effects of chlordiazepoxide and flurazepam are on motor mechanisms. (Author abstract modified)

000251 Salama, A. I.; Goldberg, M. E. Warner Lambert Research Institute, Morris Plains, NJ 07950 **Neurochemical properties of 3,3-dimethyl 1-(3-(methylamino)propyl) 1-phenylindan HCl (LU 3-049) and selected tricyclic antidepressants.** Archieves Internationales de Pharmacodynamie et de Therapie (Ghent). 225(2):317-329, 1977.

The inhibitory effects of 3,3-dimethyl-1-(3-(methylamino)propyl)-1-phenylindan HCl (Lu-3-049) on rat and mice organs compared to the effects of other tricyclic antidepressants was studied. Lu-3-049 was compared to certain antidepressants on biogenic amine metabolism. Like desipramine, Lu-3-049 was found to possess potent and selective inhibitory effects on norpinephrine uptake. In rat brain and mouse heart, both agents were found to be considerably more potent than imipramine and chlorimipramine. Unlike the latter, Lu-3-049 and desipramine possessed weak inhibitory effects on serotonin uptake in brain or spleen. Brain norepinephrine levels were unaltered following single or repeated doses of either agent. Desipramine caused a marked increase in norepinephrine turnover; Lu-3-049 caused no change or a slight decrease in turnover. Lu-3-049 had neither inhibitory effects on monoaminoxidase activity in brain or liver nor affected norepinephrine release from brain slices. Presumptive of inhibition of amphetamine metabolism, and in decreasing order of potency, iprindole, desipramine, and Lu-3-049 elevated brain levels of amphetamine. Thus, Lu-3-049 shares some but not all of the biochemical properties of tricyclic antidepressants. (Author abstract modified)

000252 Saner, A.; Pletscher, A. F. Hoffman-La Roche, CH-4002 Basel, Switzerland **Granular and extragranular action of psychotropic drugs on monoaminergic neurons.** Experientia (Basel). 33(6):809, 1977.

In a paper presented at the 9th annual meeting of the Union of Swiss Societies of Experimental Biology in Zurich, April 1977, the dopamine enhancement turnover in the striatum of rats by different primary mechanism of reserpine like and neuroleptic drugs was explored. After presynaptic DA storage was abolished, the administration of various types of drugs with reserpine like action did not cause an enhancement of the striatal DA turnover measured by the accumulation of endogenous dopa after inhibition of cerebral dopa decarboxylase. In contrast, neuroleptics like haloperidol, chlorpromazine, and clozapine still enhanced the turnover of the amine. Both types of compounds were found in the series of benzo(a)quinolizine derivatives.

000253 Sanghvi, Indravadan S.; Gershon, Samuel. Biological Research and Development, USV Pharmaceutical Corp., Tuckahoe, NY 10707 **Brain calcium and morphine action.** Biochemical Pharmacology (Oxford). 26(13):1183-1185, 1977.

A hypothesis concerning the chain of events at the postsynaptic membrane during development of tolerance and dependence to opiates and the consequent withdrawal syndrome, in which the action of brain calcium is described, is proposed. In the normal or nonopiate state, stimulation of the postsynaptic membrane causes an influx of calcium or release of bound calcium from the membrane which, in turn, stimulates a protein activator which activates an inactive adenylate cyclase, and an increase in cAMP occurs. This event is followed by increases levels of calcium in the cytosol which activates soluble PDE which hydrolyzes the cAMP and reestablishes the homeostasis. Such a mechanism may partly explain the significant blockade of precipitated abstinence syndrome when calcium is administered concurrently with morphine. 46 references.

000254 Sastry, B. S. R.; Phillis, J. W. University of Saskatchewan, Saskatoon, Saskatchewan, Canada **Antagonism of biogenic amine-induced depression of cerebral cortical neu-**

rones by Na+,K+-ATPase inhibitors. Canadian Journal of Physiology and Pharmacology (Ottawa). 55(2):170-179, 1977.

The effects of iontophoretically applied Na+ and K+ dependent adenosinetriphosphatase (Na+,K+-ATPase) inhibitors (ouabain, digitoxin, digitoxigenin, strophanthin K, strophanthidin, thevetin A and B, ethacrynate, and harmaline) on the depression of rat cerebral cortical neurones by noradrenaline, 5-hydroxytryptamine, and histamine have been studied. The inhibitors antagonized depressions of spontaneously active neurones evoked by these amines, but not those evoked by gamma-aminobutyric acid, adenosine, adenosine 5'-monophosphate, or calcium. The antagonistic potencies of the various inhibitors appeared to be proportional to their known potencies as inhibitors of Na+,K+-ATPase. The data support the hypothesis that amines depress central neurones by act activating an electrogenic sodium pump. 56 references. (Author abstract modified)

000255 Sauter, A. M.; Lew, J. Y.; Baba, Y.; Goldstein, M. Department of Psychiatry, Neurochemistry Laboratories, New York University Medical Center, New York, NY 10016 **Effect of phenylethanolamine N-methyltransferase and dopamine-beta-hydroxylase inhibition on epinephrine levels in the brain.** Life Sciences (Oxford). 21(2):261-266, 1977.

The effects of phenylethanolamine N-methyltransferase (PNMT) and dopamine-beta-hydroxylase (DbH) inhibition on the epinephrine content in specific regions of rat brain were studied. SKF 64139, a potent PNMT inhibitor, was found to be effective in lowering brain epinephrine levels. The time course of PNMT inhibition by SKF 64139 parallels the lowering of epinephrine levels in the brain. Diethyldithiocarbamate, a potent inhibitor of DbH, is effective in lowering norepinephrine and epinephrine levels and in elevating dopamine levels in the analyzed regions of the brain. It is concluded that brain epinephrine levels appear to be under similar biosynthetic control as in the adrenal glands. 17 references. (Author abstract modified)

000256 Sawaya, M. Christina B.; Dolphin, Annette; Jenner, Peter; Marsden, C. David; Meldrum, Brian S. University Department of Neurology, Institute of Psychiatry, Denmark Hill, London SE5 8AF, England **Noradrenaline-sensitive adenylate cyclase in slices of mouse limbic forebrain: characterisation and effect of dopaminergic agonists.** Biochemical Pharmacology (Oxford). 26(20):1877-1884, 1977.

The noradrenaline (NA) sensitive adenylate cyclase in mouse limbic forebrain slices was characterized and the effects of dopaminergic agonists on the enzyme determined to further the understanding of the mechanism of action of drugs such as bromocryptine. The order of potency (EC50) for stimulation of the cyclase was isoprenaline (IP) greater than adrenaline (A) and A greater than or equal to NA, which corresponds to a beta-adrenergic receptor. However, maximal stimulation was greatest for A, and smaller for NA and IP. The stimulation by IP was nonsignificantly enhanced by concomitant administration of the alpha-adrenergic agonists, phenylephrine and clonidine, but the stimulation produced by NA was not enhanced by IP. The stimulation by NA was inhibited with IC50 values of order of potency phentolamine greater than phenoxybenzamine greater than propranolol. The results suggest the presence of a population in this region of at least two types of receptor which may be stimulated by NA; one with beta-adrenergic properties and the other corresponding to a beta-dependent alpha-adrenergic receptor. Desipramine inhibited the NA sensitive adenylate cyclase suggesting some dependence of the cyclase on NA uptake mechanisms. The dopaminergic antagonist pimozide was a potent inhibitor of the cyclase. The ergot alkaloids bromocryptine and ergocornine were also potent inhibitors of the cyclase. 53 references. (Author abstract modified)

000257 Saxena, P. N.; Chawla, Naresh; Johri, M. B. L.; Iqbal, Shama. Department of Pharmacology, Jawaharlal Nehru Medical College, Aligarh Muslim University, Aligarh, India **Nature of receptors involved in apomorphine responses in pigeons.** Psychopharmacology (Berlin). 53(1):89-95, 1977.

The effect of apomorphine on the body temperature was studied in pigeons and an attempt made to determine whether the receptors mediating pecking, emesis, thermoregulatory effects, etc. were similar or different in their transmitter reactivity. Apomorphine was injected by either an intravenous or intracerebroventricular route producing dose dependent pecking and hypothermia. Large intraventricular doses produced emesis, vocalization, and opisthotonus. When apomorphine was injected intravenously, the dose required was smaller than that required by intraventricular route, suggesting that the receptors involved are located away from the ventricular surface. The reverse was true for hypothermia. The results are seen to indicate that the activation of dopamine receptors mediates the different apomorphine responses, of which only pecking is modulated by activation of tryptamine receptors. 18 references. (Author abstract modified)

000258 Scatton, B.; Boireau, A.; Garret, C.; Glowinski, J.; Julou, L. Rhone-Poulenc Recherches, Recherches Pharmaceutiques, 9, quai Jules Guesde, F-94400 Vitry-sur-Seine, France **Action of the palmitic ester of pipotiazine on dopamine metabolism in the nigro-striatal, meso-limbic and meso-cortical systems.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 296(2):169-175, 1977.

To investigate the effects of long-lasting neuroleptics on dopamine metabolism in the nigrostriatal, mesolimbic, and mesocortical systems, the effects of a single injection of the palmitic ester of pipotiazine were examined in slices of the striatum, the olfactory tubercule and nucleus accumbens and the frontal and anterior cingulate parts of the cerebral cortex in the rat. In the two first structures, dopamine synthesis was determined by measuring the rate of formation of 3H-H2O during the conversion of L-3,5-3H-tyrosine into 3H-dopa. Newly synthesized 3H-dopamine and 3H-noradrenaline were measured in the cerebral cortex. The specific activity of tyrosine in the tissues was determined in order to calculate the conversion index of tyrosine into dopamine. Marked differences were seen in the three structures examined. The palmitic ester of pipotiazine had a biphasic effect on dopamine synthesis in the striatum; an acceleration occurring for the first 5 days was followed by a marked reduction which lasted for several weeks. A biphasic effect was also seen in the olfactory tubercule and nucleus accumbens. However, the first phase of acceleration of dopamine synthesis was of longer duration (about 21 days) and the subsequent inhibitory phase was less pronounced and shorter than that observed in the striatum. The cerebral cortex reacted differently since only a single phase of increased dopamine synthesis was seen. This phase lasted for at least 35 days. The overall durations of the various changes in the rate of dopamine synthesis and in the antiamphetamine (stereotypies) activity of the ester were closely correlated. Results are discussed in relation to the antipsychotic and extrapyramidal side-effects of neuroleptics. 34 references. (Author abstract modified)

000259 Schmidt, Dennis E. Tennessee Neuropsychiatric Institute, Dept. of Pharmacology, Vanderbilt University, Nashville, TN 37217 **Effects of thyrotropine releasing hormone (TRH) on pentobarbital-induced decease in cholinergic neuronal activity.** Communications in Psychopharmacology. 1(5):469-473, 1977.

An investigation of brain cholinergic function was undertaken by biochemical assessment of the effects of thyrotropine releasing hormone (TRH) on central cholinergic neuronal activity in normal and barbiturate anesthetized rats. Rats were injected intraperitoneally with various combinations of TRH and pentobarbital. Results indicated that TRH, while devoid of any effects on regional brain levels of acetylcholine (ACh) or high affinity Na+ dependent choline uptake in normal rats, is antagonistic to the effects of pentobarbital on these biochemical parameters of brain cholinergic function. These data provide further support for the hypothesis that the antianesthetic action of TRH may be mediated, at least in part, via central cholinergic mechanisms. 8 references. (Author abstract modified)

000260 Segal, M. Isotope Department, Weizmann Institute of Science, Rehovot, Israel **Changes in hippocampal evoked responses to afferent stimulation during conditioning.** Brain Research (Amsterdam). 127(2):382, 1977.

Changes in hippocampal evoked responses to afferent stimulation during conditioning in the rat was discussed in a paper presented at the 8th Annual Meeting of the European Brain and Behaviour Society in Copenhagen, August, 1976. Averaged hippocampal field responses to commissural path stimulation were measured in awake rats trained in a classical conditioning paradigm. The afferent stimulation was applied at various intervals before, during, or after a tone which preceded food delivery or an aversive electric shock. A long latency component in the commissural evoked response emerged when the stimulus was applied during, but not before or after the tone, and only when the tone was followed by the unconditioned stimulus. A similar late commissural response was present when rats were injected with amphetamine. Drugs which block noradrenaline synthesis antagonized the late response. It is suggested that transmission in the commissural path of the rat is modified by conditioning and that noradrenaline might be involved in this effect. (Author abstract)

000261 Seil, Fredrick J.; Leiman, Arnold L.; Herman, Mary M.; Fisk, Robert A. Department of Neurology, Veterans Administration Hospital, Palo Alto, CA 94304 **Direct effects of ethanol on central nervous system cultures: an electrophysiological and morphological study.** Experimental Neurology. 55(2):390-404, 1977.

The acute effects of ethanol application on spontaneous electrical activity in cerebellar cultures derived from newborn mice and on stimulus elicited electrical responses in cultures of cerebral neocortex, and the morphological effects of chronic exposure of cerebellar explants were studied. Ethanol was applied directly to cultures of mouse cerebellum and cerebral neocortex while spontaneous electrical activity was monitored in the former and stimulus elicited responses were monitored in the latter. Ethanol characteristically demonstrated an initial excitatory effect on cerebellar cultures, manifested by an increase in spontaneous discharge rate, followed by a depression of spontaneous activity. Only depressant effects were noted in ethanol treated cerebral neocortex cultures. In both instances, removal of ethanol by washing with normal medium resulted in a return to baseline electrical activity. The rapid reversibility of the depressant effects was thought to favor a membrane altering mechanism which impairs ionic exchange. Light and electron microscopic studies of cerebellar cultures treated with ethanol for 6 to 15 days demonstrated only nonspecific changes, i.e.,an increase in lysosomes and autophagic vacuoles, particularly in astrocytes. Both electrophysiological and morphological studies revealed that the effects of ethanol in vitro were generally manifested at concentrations well above levels producing effects in vivo. 32 references. (Author abstract modified)

000262 Sellin, Lawrence C.; McArdle, Joseph J. Department of Pharmacology, New Jersey Medical School, Newark, NJ 07103 **Colchicine blocks neurotropic regulation of the resting membrane potential in reinnervating skeletal muscle.** Experimental Neurology. 55(2):483-492, 1977.

The blocking of neurotrophic regulation of the resting membrane potential in reinnervating skeletal muscle by cochicine was studied in rats. The extensor digitorum longus mucle (EDL) was denervated bilaterally by crushing the right and left deep peroneal nerves and 5 days later, a Silastic cuff containing colchicine was implanted around the left sciatic nerve (experimental EDL); a drug free cuff on the right side provided the control. Minature end plate potentials (mepps) were found in the experimental and control EDL within 10 days after nerve crush. At 15 days the experimental and control EDLs had similar mepp frequencies; however, the resting membrane potential (RMP) of the experimental EDL was significantly less than that of the control. The passive electrical properties of the sarcolemma, as well as the characteristics of indirectly elicited twitches were not significantly different for the control and experimental muscles. The control EDL, however, was more sensitive to the depolarizing action of ouabain. The data suggest that a substance of neuronal origin, other than acetylcholine, regulates the activity of an electrogenic pump involved in the early recovery of RMP during reinnervation. 32 references. (Author abstract modified)

000263 Shah, Nandkumar S.; Hixson, Elizabeth; Gulati, O. D.; Kuhn, D.; Mathur, P. P. Department of Pharmacology, Medical College, Baroda, India **Maternal-fetal distribution of methaqualone in control and SKF 525-A-pretreated pregnant mice.** Toxicology and Applied Pharmacology. 40(3):497-509, 1977.

Male mice and pregnant and nonpregnant female mice were pretreated with saline or SKF 525-A and gavaged 1 hour later with 14C)methaqualone (MTQ) in order to assess placental transfer and tissue distrbution of (14C)MTQ in mice during pregnancy. The time of peak concentrations of MTQ in fetal tissues coincided with maternal tissues suggesting a time related rate of maternal/fetal tissue distribution. Higher concentrations of MTQ in tissues of pregnant mice compared to male or nonpregnant females seemed to indicate a decreased rate of metabolism during pregnancy; a much larger magnitude of increases in tissue concentrations of MTQ in nonpregnant female and male mice compared to pregnant ones after SKF 525-A is thought to support this view. Finally, significantly increased tissue contents of unchanged MTQ in the SKF 525-A pretreated mice was seen to indicate that in mice MTQ metabolizing activity resides in the microsomes. It is concluded that the findings established a transplacental transfer of MTQ in mice. 26 references.

000264 Sharma, Virendra K.; Nagaraj, Mysore G.; Banerjee, Shailesh P. Department of Pharmacology, University of Rochester School of Medicine and Dentistry, Rochester, NY

14642 **Effect of ethanol on (3H)ouabain binding to different regions of the cat brain.** Brain Research (Amsterdam). 129(1):183-186, 1977.

The effect of ethanol on (3H)ouabain (OU) binding to different regions of the cat brain was studied in an attempt to elucidate the mechanism by which chronic ethanol administration increases sodium and potassium adenosine triphosphatase activity (Na + K ATPase) in certain brain regions. The specific OU binding was relatively higher in the thalamus and hypothalamus, intermediate in the brainstem, cerebral cortex, and cerebellum, and relatively lower in the amygdala, hippocampus, and corpus striatum. Chronic administration of ethanol markedly increased specific OU binding in the cortex, cerebellum, amygdala, and hippocampus, but there were no significant alterations in the hypothalamus, thalamus, corpus striatum, or brainstem. The results suggest that the activation of ATPase in brain following chronic administration of ethanol may not be due to direct activation of ATPase or alterations in enzyme activity as a result of alterations in membrane fluidity or synthesis of a protein required for enzyme activation. The results do not distinguish between two other possibilities, i.e. an activation of "capped" enzyme molecules, or an increased net synthesis of ATPase macromolecules. 14 references.

000265 Sharpe, L. E.; Pickworth, W. B.; Martin, W. R. Addiction Research Center, Lexington, KY 40511 **Actions of amphetamine and antagonists on pupil diameter in the chronic sympathectomized dog.** Psychopharmacology (Berlin). 53(2):115-120, 1977.

A study of chronic sympathectomized dogs pretreated with catecholamine antagonists to characterize further the peripheral and central pharmacologic components of amphetamine induced mydriasis is presented. The left superior cervical ganglia were removed from five dogs. Beginning 30 days postoperatively, epinephrine, norepinephrine and d-amphetamine were infused intravenously for 10 min following either vehicle, phenoxybenzamine, pimozide, or haloperidol. Epinephrine and norepinephrine dilated the pupil and amphetamine dilated both pupils. Phenoxybenzamine constricted primarily the pupil of the innervated iris but only partially antagonized amphetamine induced mydriasis. Haloperidol constricted both pupils and was as effective as phenoxybenzamine in antagonizing amphetamine induced mydriasis. Pimozide constricted both pupils and did not antagonize amphetamine induced mydriasis. These results suggest that amphetamine produces mydriasis in the dog through a peripheral sympathetic action and also through a central mechanism involving inhibition of the oculomotor nucleus. 29 references. (Journal abstract modified)

000266 Sherman, A. D.; Gal, E. M. Dept. of Psychiatry, University of Iowa, 500 Newton Rd., Iowa City, IA 52242 **Cerebral metabolism of intraventricular (3H)-fenfluramine.** Neuropharmacology (Oxford). 16(5):309-315, 1977.

The time course of the cerebral metabolism in rats of intraventricularly injected (3H)-fenfluramine (FE) was followed. Four hours after its intraventricular injection, 99% of cerebral FE was dealkylated to norfenfluramine (NFE). NFE had reached all areas of the brain, and was still detectable at 3 days. Two toluene extractable metabolites could be isolated from the brain. By gas chromatography and mass spectroscopy, these metabolites (FE3) were N-acetylnorfenfluramine and (FE2) m-trifluoromethyl hippuric acid. Experiments in vitro confirmed the cerebral synthesis of FE2. Distributional studies indicated that the level of FE2 in the neocortex was twice as high as that in the brainstem. In rats injected with Lilly 110140, the cerebral conversion of intraventricular FE to FE3 and FE2 did not take place. Iprindole given alone or in combination with Lilly 110140 increased cerebral levels of FE2 and FE3. FE2 and FE3 were recoverable from the urine but not from the liver of rats given intraperitoneal or intraventricular FE. Intraperitoneal injection of FE did not lead to the appearance of FE2 and FE3 in brain. Administration of Iprindole increased the urinary output of FE2 and FE3, but not of FE and NFE. Following subcellular and density gradient fractionation, 20% of all FE3 and 10% of all NFE appeared in the synaptosomal fraction. The marked differences in the metabolism of FE and para-chloramphetamine both neurotoxic agents, are discussed. 20 references. (Author abstract)

000267 Sherman, A. D.; Hsiao, W.-C.; Gal, E. M. Department of Psychiatry, University of Iowa College of Medicine, 500 Newton Road, Iowa City, IA 52242 **Cerebral metabolism of (3H)-p-chloroamphetamine.** Neuropharmacology (Oxford). 16(1):17-24, 1977.

The cerebral metabolism of tritiated p-chloroamphetamine administered i.p. or intraventricularly was studied in Sprague-Dawley rats. Tritiated p-chloroamphetamine, was administered by stereotaxic injection into the right lateral ventricle and the rats were sacrificed at 0, 4, 6, 8, or 12 hr or 1, 2, 3, 5, or 7 days later. Some rats were pretreated with 3-(p-trifluoromethylphenoxy)-N-methyl-3-phenylpropylamine (Lilly 110140), an inhibitor of serotonin reuptake, or iprindole, an inhibitor of peripheral hydroxylation, or both Lilly 110140 and iprindole; pretreating drugs were given 1 hr before p-chloroamphetamine. Radioactive urinary metabolites recovered were p-chloroamphetamine, p-chlorononorephedrine, and P3. Pretreatment with Lilly 110140 prevented or markedly reduced the synthesis of both p-chlorononorephedrine and P3. Iprindole prevented the synthesis of p-chlorononorephedrine. P3 appeared first in the brain homogenate and then in the liver, suggesting that both these organs can metabolize p-chloroamphetamine to this compound. The metabolites were recovered primarily from nuclear and microsomal fractions following subcellular fractionation of the brain, with small quantities present in the synaptosomal fraction. The level of metabolites was higher in the brainstem than in the neocortex. Glutathione, administered with p-chloroamphetamine, failed to alter the toxicity of the latter. 23 references.

000268 Sinclair, John G.; Lo, Grace F. Div. of Pharmacology and Toxicology, University of British Columbia, Vancouver, B.C. V6T 1W5, Canada **The blockade of serotonin uptake into synaptosomes: relationship to an interaction with monoamine oxidase inhibitors.** Canadian Journal of Physiology and Pharmacology (Ottawa). 55(2):180-187, 1977.

To test the hypothesis that the hyperpyrexia produced by meperidine and detromethorphan in rabbits pretreated with a monoamine oxidase inhibitor is related to inhibition of neuronal uptake of serotonin (5-hydroxytryptamine, 5-HT, fluoxetine (Lilly 110140) a specific 5-HT neuronal uptake blocker was studied. Fluoxetine was administered to phenelzine pretreated rabbits and found to produce a lethal hyperpyrexia in doses equal to or greater than 2.5mg/kg. The order of potency in blocking 5-(14C)HT uptake into synaptosomes prepared from rabbits was: fluoxetine, meperidine, dextromethorphan, levorphanol, anileridine, alphaprodine, morphine. Since fluoxetine, meperidine, and dextromethorphan produce hyperpyrexia in phenelzine pretreated rabbits, whereas anileridine, alphaprodine, and morphine do not, there appears to be some correlation between the hyperpyrexic response and inhibition of 5-HT uptake. The exception is levorphanol, which is not

hyperpyrexic despite being equipotent with meperidine and dextromethorphan in inhibiting 5-HT uptake. It was concluded that the ineffectiveness of levorphanol in producing hyperpyrexia may be due to its marked depressant properties, since the addition of another depressant drug (pentobarbital) antagonized the hyperpyrexic effect of meperidine. 23 references. (Author abstract)

000269 Sjolund, Bengt; Bjorklund, Anders, Wiklund, Leif. Department of Physiology, University of Lund, Lund, Sweden **The indolaminergic innervation of the inferior olive. 2. relation to harmaline induced tremor.** Brain Research (Amsterdam). 131(1):23-37, 1977.

The possible involvement of serotoninergic mechanisms in the induction of harmaline generated tremor in the inferior olive was investigated electrophysiologically in the cat and rat. Mass recordings of Purkinje cell activity in the cat showed that harmaline induces strong, synchronous and rhythmic activity in those parts of the climbing fibre system originating in the caudal part of the medial accessory olive and the caudolateral parts of the dorsal accessory nucleus, areas of the cat olive shown to receive a dense serotoninergic innervation. In the rat, the selective removal of the serotoninergic innervation, produced by an intraventricular injection of 5,6-dihydroxytryptamine, or 5,7-dihydroxytryptamine in combination with desipramine, caused a significant attenuation of both the tremor and the climbing fibre activity induced by an intravenous harmaline injection. In the 5,6-dihydroxytryptamine treated animals the reappearance of the harmaline tremor seemed to parallel the regrowth of new serotoninergic axon sprouts in the inferior olive. It is proposed that the serotoninergic afferents to the accessory olivary nuclei are of critical importance for the tremor induction of harmaline in the inferior olive. It is suggested that harmaline, rather than acting directly on the olivary neurones, exerts its effect through an interference with a serotoninergic (possibly inhibitory) innervation of these cells. 69 references. (Author abstract)

000270 Smith, Alfred A.; Hui, Ferdinand W.; Crofford, Marsha J. New York Medical College, Depts. of Pharmacology and Psychiatry, 106th St. and 5th Ave., New York, NY 10029 **Inhibition of growth in young mice treated with d,l-methadone.** European Journal of Pharmacology (Amsterdam). 43(4):307-314, 1977.

A report describing the inhibition of growth and neonatal mice with d,l-methadone is presented. Neonatal mice were treated with d,l-methadone, l-alpha-acetylmethadol (LAAM) or the narcotic antagonists, naloxone, nalorphine or levallorphan. Littermates were injected with normal saline solution and handled in the same way. Injection of methadone inhibited weight gain in a log dose related fashion; LAAM also retarded weight gain. Mice gained weight normally when naloxone was injected with methadone. Furthermore, the daily injection of d-methadone did not inhibit weight gain nor did any of the narcotic antagonists. Their findings indicate that growth inhibition induced by methadone is a stereospecific, opioid effect. 12 references. (Journal abstract)

000271 Smith, Andrew P. Department of Pharmacology, University of California, San Francisco, CA 94143 **The effect of pH on stereospecific opiate binding to mouse brain membranes.** Research Communications in Chemical Pathology and Pharmacology. 17(3):375-398, 1977.

To examine the effect of pH on stereospecific opiate binding, a series of investigations in mouse brain membranes was undertaken. High affinity, in vitro stereospecific binding of 3H-dihydromorphine or 3H-naloxone to brain membranes shows a marked dependence on pH; maximal binding, observed at pH 7.5to 8.0, is abruptly and reversibly reduced as the pH is lowered, with the binding half maximal at about pH 6.8. A similar pH dependence of stereospecific binding is observed with the quaternary agonist N-methyl morphine, but nonspecific 3H-dihydromorphine of 3H-naloxone binding (that not displaced by a 100 fold excess of unlabelled levorphanol) shows only a slight decrease in this pH range. Binding of agonist and antagonist at pH 6.8show the same differences with respect to trypsin sensitivity and to the effects of Na+ and Mn++ ions that are seen at pH 8.0. It is concluded that the ability of low pH to reduce stereospecific binding is due to protonation of a membrane bound site, and that this site is probably the anionic site of the opiate receptor. Only phosphate exhibits a pK close to that of this effect, suggesting that the opiate receptor may be a phosphoprotein. 16 references. (Author abstract modified)

000272 Smith, Howard E.; Burrows, Elizabeth P.; Mobley, Philip L.; Robinson, Susan E.; Sulser, Fridolin. Department of Chemistry, Vanderbilt University, Nashville, TN 37235 **Agonist effects of beta-phenlethylamines on the noradrenergic cyclic adenosine 3',5'-monophosphate generating system in rat limbic forebrain. Stereoisomers of para-hydroxynorephedrine.** Journal of Medicinal Chemistry. 20(7):978-981, 1977.

Enantiomers of para-hydroxynorephedrine and para-hydroxynorpseudoephedrine were prepared and their effects on the noradrenergic cyclic adenosine 3',5'-monophosphate (cAMP) generating system in the rat limbic forebrain were compared with those of enantiomers of norepinephrine (NE). The data indicate that significant agonist activity for the specific noradrenergic cAMP generating system in the rat limbic forebrain requires a beta-3,4-dihydroxyphenethylamine with a beta-hydroxyl group in the R-configuration. Neither of the enantiomers of para-hydroxynorephedrine nor of para-hydroxynorpseudoephedrine mimicked the agonist activity of (R)-NE. It remains to be established, however, whether one of the para-hydroxynorephedrines exhibits antagonist activity in this receptor system. 34 references. (Author abstract modified)

000273 Smith, Robert C.; Meltzer, Herbert Y.; Arora, Ramesh C.; Davis, John M. Texas Research Institute of Mental Sciences, 1300 Moursund, Texas Medical Center, Houston, TX 77030 **Effects of phencyclidien on (3H)catecholamine and (3H)serotonin uptake in synaptosomal preparations from rat brain.** Biochemical Pharmacology (Oxford). 26(15):1435-1439, 1977.

Data on the effects of phencyclidine on uptake of catecholamines and serotonin in rat brain tissue are presented and the potencies of phencyclidine, d-amphetamine, and methylphenidate are compared. Phencyclidine inhibited uptake in vitro of (3H)norepinephrine, (3H)dopamine, and (3H)serotonin in crude synaptosomal preparations from rat brain through a competitive mechanism. Phencyclidine was fairly similar in potency to d-amphetamine and methylphenidate in inhibiting catecholamine uptake but was eight times more potent than d-amphetamine and 34 times more potent than methylphenidate in inhibiting (3H)serotonin uptake. 29 references. (Author abstract modified)

000274 Solomon, Jolane; Cocchia, Mary Ann; DiMartino, Rita. Biology Department, Boston College, Chestnut Hill, MA 02167 **Effect of delta9-tetrahydrocannibinol on uterine and vaginal cytology of ovariectomized rats.** Science. 195(4281):875-877, 1977.

The estrogen like effect of delta9-tetrahydrocannabinol (THC), an active component of marihuana, on uterine and vaginal cytology of ovariectomized rats was studied by measuring uterine weight gain and examining vaginal smears from 55 subjects. Doses of 1, 2, 5, and 10mg/kg THC elicited hypertrophy and hyperplasia of the uterus; the dose of 2.5mg/kg was most effective. Stratification of vaginal epithelium increased with doses of 2.5and 10mg/kg, and cornifying cells were seen with 2.5mg/kg. It is suggested that THC may increase the secretion of adrenal steroids, which in turn may influence the response of the castrate vagina and uterus to THC. 21 references. (Author abstract modified)

000275 Sprugel, W.; Mitznegg, P.; Heim, F. Pharmakologisches Institut der Universitat Erlangen-Nurnberg, D-8520 Erlangen, Germany **The influence of caffeine and theobromine on locomotive activity and the brain cGMP/cAMP ratio in white mice.** Biochemical Pharmacology (Oxford). 26(18):1723-1724, 1977.

To establish a correlation between caffeine induced locomotive activity and the cyclic adenosine 3,5monophosphate/cyclic guanosine 3,5monophosphate (cAMP/cGMP) ratio and to assess the effects of theobromine on caffeine induced locomotor activity and cAMP/cGMP, a series of studies were undertaken with male mice. It was found that caffeine produced a 90% increase in locomotor activity which was completely antagonized by theobromine, although theobromine alone had no effects on locomotor activity. Caffeine administration resulted in a decrease in total brain cAMP and an increase in total brain cGMP, these effects were both prevented by theobromine pretreatment, although alone theobromine had no effects. The cAMP/cGMP ratio was elevated after caffeine but remained unchanged after theobromine and caffeine plus theobromine. Implications and directions for future research are discussed. 22 references.

000276 Steranka, L.; Bessent, R.; Sanders-Bush, E. Dept. of Pharmacology, Vanderbilt University, Tennessee Neuropsychiatric Institute, Nashville, TN 37217 **Reversible and irreversible effects of p-chloroamphetamine on brain serotonin in mice.** Communications in Psychopharmacology. 1(5):447-454, 1977.

To investigate the reversible and irreversible effects of p-chloroamphetamine (PCA) on brain serotonin (5HT), PCA was injected intraperitoneally in mice. Results indicated that 5HT levels in the brains of mice injected with PCA were decreased at 6 hrs after drug administration, returned to control levels at 20 hrs, decreased again at 32 and 48 hrs, and then returned to normal by 3 weeks. The administration of the specific 5HT uptake blocker, fluoxetine, 4 hrs prior to sacrifice reversed the 5HT depletion at 8 hrs, but not at 32 and 48 hrs after PCA administration. It is suggested that, as also reported in rats, PCA administration to mice induces both a reversible and irreversible phase of 5HT depletion, but the duration of both phases is much shorter in mice than in rats. 12 references. (Author abstract modified)

000277 Stricker, E. M.; Zimmerman, M. B.; Friedman, M. I.; Zigmond, M. J. Department of Psychology, University of Pittsburgh, Pittsburgh, PA 15260 **Caffeine restores feeding response to 2-deoxy-D-glucose in 6-hydroxydopamine-treated rats.** Nature (London). No. 5607:174-175, 1977.

A study was conducted to determine whether acute administration of caffeine would restore feeding response to 2-deoxy-D-glucose in 6-hydroxydopamine lesioned rats. Male albino Spraque-Dawley rats were observed prior to lesions and intake of 2-deoxy-D-glucose was measured. Lesions were then performed by administration of 6-hydroxydopamine. 6-Hydroxydopamine rats did not increase food intake after 2-deoxy-D-glucose treatment alone, but intake was increased when 2-deoxy-D-glucose was administered together with caffeine. A discussion of these results in terms of the activating mechanisms of the central catecholamine receptors is provided.

000278 Swanson, P. D. Division of Neurology, Department of Medicine, University of Washington, Seattle, WA 98195 **Effects of beta-bungarotoxin, diphenylhydantoin and metabolic inhibitors on calcium uptake and on monovalent cations and high-energy phosphate contents of brain slices.** Journal of Neurochemistry (Oxford). 29(4):767-769, 1977.

The effects of beta-bungarotoxin, diphenylhydantoin, and metabolic inhibitors on calcium and on monovalent cations and high energy phosphate content of brain slices, were studied in slices of guinea-pig cerebral cortex. Dicoumarol, antimycin-A, and rotenone effectively diminished slice contents of creatinine phosphate and reduced ATP contents to a lesser degree. Ruthenium red and beta-bungarotoxin also brought about sharply lower contents of high energy phosphates; while diphenylhydantoin did not signigicantly alter contents of either ATP or creatine phosphate. After 10 min exposure none of the agents studied brought about significant alterations in K+ or 40Ca2+. After 40 min in the presence of mitochondrial inhibitors, K+ contents were lowered 10% to 22%. Little change in K+ was noted in the presence of ruthenium red or diphenylhydantoin, while beta-bungarotoxin brought about a 27% decrease. Uptake of 45Ca by the slices was reduced 7% to 18% by antimycin-A, rotenone, or ruthenium red; and 40Ca2+ uptake was increased by 30% in the presence of beta-bungarotoxin, and was unchanged in the presence of dicoumarol or diphenylhydantoin. None of the agents examined significantly affected 40Ca2+ levels. 12 references.

000279 Tabakoff, B.; Moses, Frances; Philips, S. R.; Boulton, A. A. Department of Physiology, University of Illinois Medical Center, 901 S. Wolcott St., Chicago, IL 60612 **Effects of tranylcypromine and pargyline on brain tryptamine.** Experientia (Basel). 33(3):380-381, 1977.

The effects of tranylcypromine and pargyline on the tryptamine levels in the brains of rats were studied. Tranylcypromine produces behavioral excitation while pargyline produces depression. Tranylcypromine increased brain tryptophan which led to an accumulation of tryptamine. The levels of tryptamine after tranylcypromine were found to be 3 times those found after pargyline. Since tranylcypromine was found to elevate brain tryptophan levels while pargyline did not, it was postulated that, considering the kinetic characteristics of tryptophan hydroxylase and aromatic amino acid de-decarboxylase, tryptophan may be decarboxylated to tryptamine, and tryptamine would be responsible for some of the behavioral effects seen after tranylcypromine administration. 21 references. (Author abstract)

000280 Tabakoff, Boris; Ritzmann, R. F. Dept. of Physiology, Univ. of Illinois Medical Center, P.O. Box 6998, Chicago, IL 60680 **The effects of 6-hydroxydopamine on tolerance to and dependence on ethanol.** Journal of Pharmacology and Experimental Therapeutics. 203(2):319-331, 1977.

In an investigation designed to elucidate the relationship between tolerance to ethanol and physical dependence on ethanol, the involvement of the noradrenergic (NE) systems in the development of tolerance to ethanol in mice was studied.

Results indicate that the intraventricular administration of 6-hydroxydopamine (6tOHDA) before chronic ethanol exposure prevented the development of tolerance to the hypnotic and hypothermic effects of ethanol, as well as cross tolerance to barbiturates. The injection of 6-OHDA depleted brain norepinephrine, but had little effect on levels of dopamine and serotonin. Although mice pretreated with 6-OHDA did not develop tolerance to ethanol, they exhibited signs of physical dependence after chronic treatment with ethanol. When 6-OHDA was administered after tolerance to ethanol was established, the destruction of noradrenergic neurons had little effect in disrupting the tolerance. It is concluded that noradrenergic systems may be necessary for the "consolidation" but not the expression of tolerance. 42 references. (Author abstract modified)

000281 Tachizawa, Haruo; Saito, Tadashi; Akimoto, Takeshi. Research Institute, Daiichi Seiyaku Co., Ltd., Edogawa-ku, Tokyo 132, Japan **Inhibition of prostaglandin synthetase system in the rabbit renal medulla by psychotropic drugs.** Japanese Journal of Pharmacology (Kyoto). 27(3):462-464, 1977.

To examine whether the inhibition of prostaglandin (PG) biosynthesis by psychotropic drugs is related to the anti-inflammatory and analgesic activities of these agents, the inhibition of PG synthetase system in the rabbit renal medulla using chlormezanone, hydroxyzine, diazepam, chlorpromazine, and desipramine as representatives of minor or major tranquilizers and antidepressants, and aspirin and indomethacin as reference compounds. Diazepam was the most potent inhibitor of psychotropic drugs despite the lack of anti-inflammatory and analgesic activities. In addition, hydroxyzine which has appreciable analgesic activity but not anti-inflammatory activity, possessed only a weak ability to inhibit PG biosynthesis. On the basis of the results, it is suggested that the anti-inflammatory activity shown by chlorpromazine and desipramine may be mainly induced by the suppression of the CNS even if PG synthetase inhibition by both drugs may to some extent participate in anti-inflammatory activity. It is concluded that inhibition of PG biosynthesis by the psychotropic drugs tested is apparently weak with little relation to the anti-inflammatory and analgesic activities. 12 references.

000282 Tjioe, Sarah A.; Manian, A. A.; O'Neill, J. J. Department of Pharmacology, College of Medicine, Ohio State University, Columbus, OH 43210 **A comparative study of dihydroxylated phenothiazine derivatives as mitochondrial inhibitors.** Journal of Neurochemistry (Oxford). 29(2):245-249, 1977.

The effects of several dihydroxylated phenothiazine derivatives on brain mitochondrial calcium retention, respiration and ATP synthesis were studied and compared to those of 7,8-dihydroxy-chlorpromazine. It was found that 2,3-dihydroxypromazine has little effect on mitochondrial calcium retention, but is a potent inhibitor of oxidative phosphorylation. 3,7-Dihydroxychlorpromazine and 3,8-dihydroxychlorpromazine produced a relatively slow and incomplete efflux of preaccumulated calcium and caused a limited inhibition of respiration. 7,8-Dihydroxyperphenazine and 7,8-dihydroxyprochlorperazine promoted an efflux of mitochondrial calcium and inhibited mitochondrial respiration as was seen with 7,8-dihydroxychlorpromazine. It is reported that the effects seen with 7,8-dioxochlorpromazine are also similar to those seen with 7,8-dihydroxychlorpromazine, suggesting that oxidation products may contribute to the inhibitory effects observed. 11 references. (Author abstract modified)

000283 U'Prichard, David C.; Greenberg, David A.; Snyder, Solomon H. Department of Pharmacology, Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Norepinephrine alpha receptor binding in mammalian central nervous system: differential labeling with agnoist and antagonist.** Research Report, NIMH Grant, MH-18501, 1977. 35 p.

The detailed characteristics of (3h)WB-4101 and (3H)clonidine binding to rat brain membranes were studied to assess prior results which indicate that the former selectively labels an antagonist state of the alpha-noradrenergic receptor for norepinephrine, while the latter is associated with an agonist state. It was found that: 1) binding of both (3H)-ligands is saturable; 2) a series of catecholamines inhibits binding of both ligands in a potency order corresponding to the relative activities of these agents at alpha receptors in the periphery; 3) competition for binding is stereoselective; and 4) classical alpha antagonists inhibit bonding at low concentrations, but beta antagonists are much weaker. Findings are explained by the existence of discrete agonist and antagonist states of the alpha receptor as suggested. Regional variations in the binding of both ligands in the brain are not pronounced, although levels tend to be highest in hypothalamus and cerebral cortex and lowest in cerebellum. Treatment with 6-hydroxydopamine does not decrease binding, suggesting that it occurs at postsynaptic sites in the mammalian CNS. 30 references. (Author abstract modified)

000284 Ulus, I. H.; Meyer, E., Jr.; Wurtman, R. J.; Lytle, L. D. Dept. of Nutrition and Food Science, MIT, Cambridge, MA 02139 **Trans-synaptic induction of adrenal tyrosine hydroxylase following amphetamine treatment in the rat.** Neuropharmacology (Oxford). 16(9):635-637, 1977.

The extent to which treatment with d-amphetamine changes tyrosine hydroxylase activity in adrenals of rats previously subjected to surgical denervation was determined. Daily injections of d-amphetamine sulfate (5mg/kg), given in combination with the hepatic microsomal inhibitor iprindole, increased the tyrosine-hydroxylase activity in rat adrenals by 41% after 4 days. Choline acetyltransferase activity also increased significantly. Neither change was observed in animals whose adrenals had been denervated by transection of the splanchic nerve, thus indicating that the increases were mediated by the central nervous system and by transsynaptic mechanisms. 10 references. (Journal abstract)

000285 Ungar, Frieda; Mosnaim, Aron D.; Ungar, Benedict; Wolf, Marion E. Department of Biochemistry, Chicago Medical School, Chicago, IL **Tyramine-binding by synaptosomes from rat brain: effect of centrally active drugs.** Biological Psychiatry. 12(5):661-668, 1977.

Tyramine binding by synaptosomes from rat brain and the effect of centrally active drugs on this function were investigated. It was found that incubation of para-tyramine (TRM) with rat midbrain plus corpus striatum (MB.CS) crude synaptosomal preparations, under conditions which reduce to a minimum amine uptake, results in appreciable binding of this amine by synaptosomes. This process is inhibited by preincubation with a number of drugs active in the CNS, e.g. chlorpromazine, desipramine, d-amphetamine, and diphenhydramine. Morphine, however, does not affect this binding. The Ki for each one of these compounds, as well as the K association constant and concentration of the binding sites of TRM, were determined. These results suggest a role for TRM in synaptic transmission mechanisms occurring in the nigrostriatal system, a function which could be regulated by a

number of substances representing some of the major chemical classes of centrally active drugs (CD). 30 references. (Journal abstract modified)

000286 van Zweiten, P. A. Afdeling Farmacotherapie, Laboratorium voor Farmacie, Universiteit van Amsterdam, Plantage, Muidergracht 24, Amsterdam, The Netherlands **Inhibition of the central hypotensive effect of clonidine by trazodone, a novel antidepressant.** Pharmacology (Basel). 15(4):331-336, 1977.

To determine if 2-(3-(4-(m-chlorophenyl)-piperazin-1-yl-)-propyl)-s-triazolo(4,3-a)-py idin-3(2H)-on (trazodone), a nontricyclic antidepressart, would inhibit the central hypotensive effects of clonidine, cats were injected with an infusion of both drugs and the hypotensive effects of clonidine were assessed. Trazodone diminished the central hypotensive response to clonidine in a dose dependent manner. Both drugs were infused into the left vertebral artery of chloralose anaesthetized cats. Intravenously injected trazodone did not reduce the central hypotensive effect of clonidine. The antagonism probably occurs at the level of central alpha adrenoreceptors in the brainstem, where clonidine is the alpha agonist and trazodone the alpha antagonist. Such an antagonism, already known for clonidine and the tricyclic drugs also holds for nontricyclic antidepressants, provided that they possess alpha adrenoreceptor blocking activity. 22 references. (Author abstract modified)

000287 Vandaris, Richard M.; Weisz, Donald J. Department of Psychology, Kent State University, Kent, OH 44242 **Delta9-tetrahydrocannabinol and the hippocampus: effects on CA1 field potentials in rats.** Brain Research Bulletin. 2(3):181-187, 1977.

To elucidate the psychophysiological effects of delta9-tetrahydrocannabinol (THC), the major psychoactive constituent of marihuana, orthodromically and antidromically elicted CA1 field potentials were observed in locally anesthetized and urethane anesthetized rats (n=50) following intraperitoneal administration of THC. THC augmented amplitudes of population EPSP's as well as orthodromic and antidromic population spikes from pyramidal cells in locally anesthetized animals. Latencies to peak amplitude of these responses were increased. Conditioning test shock experiments revealed that THC also depressed recurrent inhibition probably mediated by basket cells. In animals under urethane anesthesia THC enhanced test responses, but failed to augment population responses to the conditioning stimulus. It is concluded that THC enhanced postsynaptic excitatory processes but attenuated recurrent inhibition. Urethane anesthesia completely blocked the postsynaptic excitatory effect of THC but had little apparent influence on THC's disinhibitory action. 16 references. (Author abstract modified)

000288 Vellucci, Sandra V. Department of Pharmacology, School of Pharmacy, University of London, 29/39 Brunswick Square, London WC1N 1AX, England **The effects of ether stress and betamethasone treatment on the concentrations of noradrenaline and dopamine in various regions of the rat brain.** British Journal of Pharmacology (London). 60(4):601-605, 1977.

To further examine the effects of physical stress and the effects of a known inhibitor on corticotrophin (ACTH) releasing activities of this stress, concentrations of noradrenaline (NA) and dopamine associated with ether stress and betamethasone treatment were studied in various regions of rat brain. Exposure to ether vapor caused a significant decrease in the concentration of hypothalamic NA but had no effect on catecholamine (CA) concentrations in the other regions studied. Treatment with betamethasone alone given in the drinking water for 24 h, had no effect on CA levels in the cerebral cortex, midbrain or hypothalamus. However, pretreatment with this dose of steroid prevented the decreases in hypothalamic NA which were normally seen after ether stress and also induced significant increases in the concentration of midbrain NA. The data provide further support for the involvement of NA in the regulation of stress induced corticotrophin (ACTH) release and indicate that centers other than the hypothalamus may be involved in mediating the inhibitory action of betamethasone on the response to ether stress. 27 references. (Author abstract modified)

000289 Vonvoigtlander, P. F.; Losey, E. G. Research Laboratories, Upjohn Company, Kalamazoo, MI 49001 **Prostaglandin E2, cyclic adenosine monophosphate and morphine analgesia.** Brain Research (Amsterdam). 128(2):275-283.

Prostaglandin E2 (PGE2) cyclic adenosine monophosphate, (cAMP) and morphine analgesia were investigated in mice to determine whether the interactions of morphine, cAMP and PGE2 are relevant to the analgesic action of morphine. Drugs were administered by intravenous, intraperitoneal, or subcutaneous route into brain, then dissected and analyzed. Intravenous administration of PGE2 resulted in significant distribution of this drug into the brain and elevation of cAMP in the midhindbrain and corpus striatum. Neither acute morphine administration, which elevates cAMP levels, nor morphine tolerance altered this response. These elevations were blocked by the narcotic antagonist, naloxone, at supra analgesic doses. It is concluded that morphine analgesia does not correlate with either elevation of cAMP levels or antagonism of PGE2 induced elevations of cAMP. 19 references. (Author abstract modified)

000290 Waddington, J. L. Division of Psychiatry, Clinical Research Centre, Harrow, Middlesex HA1 3UJ, England **GABA-like properties of flurazepam and baclofen suggested by rotational behaviour following unilateral intranigral injection: a comparison with the GABA agonist muscimol.** British Journal of Pharmacology (London). 60(2):263P-264P, 1977.

Male rats were given unilateral stereotaxic injections of flurazepam, baclofen, or the gamma-aminobutyric acid (GABA) antagonist muscimol and rotational behavior was measured in automated rotameter bowls to test the hypothesis that benzodiazepines enhance GABA transmission. Both flurazepam and baclofen produced a dose dependent contralateral rotation. These effects were mimicked by muscimol. Control animals showed a weak ipsilateral rotation. The results suggest that baclofen may have some GABA agonist activity and further emphasize the GABA like properties of benzodiazepines. 7 references.

000291 Wallnau, Larry B.; Gallup, Gordon G., Jr. Department of Psychology, SUNY, Albany, NY 12222 **A serotonergic, midbrain-raphe model of tonic immobility.** Biobehavioral Reviews. 1(1):35-43, 1977.

Research involving the effects of serotonergic and other pharmacological manipulations on tonic immobility is reviewed. An attempt is made to show how these findings parallel independent research involving precursor availability and drug induced changes in the electrical activity of raphe neurons. Central serotonergic neuronal mechanisms appear to play a crucial role in modulating tonic immobility. Questions concerning the existence of a negative feedback loop between raphe units and postsynaptic neurons, and recent developments which bear on opiate effects and tonic immobility are also examined. 89 references. (Author abstract modified)

000292 Wang, Rex Y.; Aghajanian, George K. Department of Psychiatry, Yale University School of Medicine, New Haven, CT 06508 **Antidromically identified serotonergic neurons in the rat midbrain raphe: evidence for collateral inhibition.** Brain Research (Amsterdam). 132(1):186-193, 1977.

To investigate the possibility that poststimulus inhibition of 5-hydroxytryptamine (5-HT) in neurons following antidromic stimulation might be mediated by 5-HT axon collaterals, and to characterize properties of antidromically identified 5-HT containing cells, a series of investigations was undertaken in rats. Data provide several lines of evidence indicating that depression in firing of serotonergic neurons in the midbrain raphe induced by ventromedial tegmentum (VMT) stimulation may be mediated directly through 5-HT axon collaterals: 1) VMT induced silent period was prevented by destruction of 5-HT axons in the VMT, but not by lesions in other systems; 2) latency for this silent period was the same as for antidromic action potentials; 3) silent period was not dependent on the presence of antidromic invasion, and the period was proportional to stimulus intensity; 4) iontophoresis of 5-HT directly onto identified 5-HT containing cells invariably produced inhibition; and, 5) both 5-HT inhibition and poststimulus inhibition were potentiated by iontophoretic application of chlorimipramine but not by desipramine or picrotoxin. 32 references.

000293 Warwick, Robert O.; Bousquet, William F.; Schnell, R. Craig. Department of Pharmacology and Toxicology, Purdue University, Lafayette, IN 47907 **Effect of acute and chronic morphine treatment on serotonin uptake into rat hypothalamic synaptosomes.** Pharmacology (Basel). 15(5):415-427, 1977.

To determine whether alterations in the thermoregulatory responses result in morphine induced modification of serotonin uptake into rat hypothalamic synaptosomes, the effect of morphine on uptake of serotonin into hypothalamic synaptosomes was determined following acute and chronic morphine treatment in the rat. The uptake of serotonin was noncompetitively inhibited by in vitro morphine but not by an acute morphine treatment which produces hypothermia. Uptake of serotonin into hypothalamic synaptosomes derived from rats rendered tolerant to the hypothermic effect of morphine or rats withdrawn from morphine was not altered either in the absence or presence of in vitro morphine as compared to control rats. These data indicate that alterations in thermoregulatory responses of the rat to either acute or chronic morphine treatment do not result from morphine induced modification of serotonin uptake into hypothalamic neurons. 39 references. (Author abstract modified)

000294 Weakly, J. N.; Proctor, W. R. Department of Physiology, School of Medicine, University of North Carolina, Chapel Hill, NC 27514 **Barbiturate-induced changes in transmitter release independent of terminal spike configuration in the frog neuromuscular junction.** Neuropharmacology (Oxford). 16(7/8):507-509, 1977.

The hypothesis that prolongation of the action potential in motor nerve terminals is the basis for the barbiturate induced increase in evoked acetylcholine release in the frog neuromuscular junction was tested by comparing dose dependencies of the phenobarbital effect on the configuration of the terminal action potential with the enhancement of transmitter release previously determined. Extracellular microelectrodes were used to record the external end plate potentials and terminal action potentials in frog neuromuscular junctions in the presence and absence of phenobarbital. Concentrations of phenobarbital which significantly increased the mean number of quanta of transmitter released by a presynaptic impulse had no observable effect on the configuration of the presynaptic action potential. It is concluded that the barbiturate induced increase in transmitter release is not the result of prolongation of the terminal action potential. 15 references. (Author abstract modified)

000295 Weiner, William J.; Nausieda, Paul A.; Klawans, Harold L. Department of Neurological Sciences, Rush-Presbyterian-St. Luke's Medical Center, Chicago, IL 60612 **Effect of chlorpromazine on central nervous system concentrations of manganese, iron, and copper.** Life Sciences. 20(7):1181-1186, 1977.

The effects of chlorpromazine (CZ) on the concentrations of manganese (Mn), iron (Fe), and copper (Cu) in the caudate nucleus, frontal cortex, and cerebellar hemisphere were studied in guinea pigs. Chronic CZ administration increased Mn in caudate nucleus and cerebellar hemisphere, but did not affect frontal cortex Mn concentration. CZ increased Fe in the caudate nucleus, decreased it in the frontal cortex, and did not affect it in the cerebellar hemisphere. CZ decreased Cu concentrations in all central nervous system regions examined. The alterations in dopamine responsiveness produced by chronic CZ may in part be related to increased Mn and Fe concentrations. The altered responsiveness of striatal dopamine receptor sites following prolonged neuroleptic administration in patients is believed to be a possible etiologic factor in the induction of neuroleptic induced tardive dyskinesia. Metal chelation therapy with neuroleptics might prove of value in preventing or reversing tardive dyskinesia. 29 references.

000296 Whitaker, Patricia M.; Seeman, Philip. Pharmacology Dept., Medical Sciences Building, University of Toronto, Toronto M5S 1A8, Canada **Hallucinogen binding to dopamine/neuroleptic receptors.** Journal of Pharmacy and Pharmacology (London). 29(8):506-507, 1977.

To examine the suggestion that hallucinogenic drugs can act directly on brain dopamine receptors, the effects of various hallucinogens on the binding of (3H)haloperidol and (3H)apomorphine to calf brain tissues were examined. It is known that these two ligands bind to sites closely related to, if not identical with the dopamine receptor. Results suggest that the tryptamine derivatives may reciprocally affect both the antagonist as well as the agonist state of the dopamine receptor -- there may be a tryptaminergic, as well as a dopaminergic component of haloperidol binding. 22 references.

000297 Wielosz, M.; Roncaglioni, M. C.; de Gaetano, G.; Garattini, S. Istituto di Ricerche Farmacologiche Mario Negri, Via Eritrea 62, 20157 Milano, Italy **Interference by fenfluramine with the storage of 14C-5-hydroxytryptamine in rat platelets.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 225(2):232-239, 1977.

The effect of fenfluramine on rat brain in vitro and in vivo storage of 14C-5-hydroxytryptamine (14C-5HT) was studied. Fenfluramine decreases the 14C-5HT stored in rat platelets both in vitro and in vivo systems, indicating a release of the amine. The effect of fenfluramine in vitro increases by increasing the concentration of the drug, the time of incubation with platelets, and the temperature. It is not accompanied by loss of lactate dehydrogenase, thus excluding an unspecific damage to the platelet membrane induced by the drug. In addition it is not inhibited either by inhibitors of the uptake of 5HT (chlorimipramine, Lilly 110140) or by inhibitors of the

platelet "release reaction" (acetylsalicylic acid) or by an excess of cold 5HT in the incubation medium. The effect of fenfluramine in vivo is dose dependent and increases gradually up at least 18 hr after drug's administration. It is significantly inhibited in rats pretreated by either chlorimipramine or Lilly 110140, but not by acetylsalicyclic acid. In analogy with the effect of fenfluramine on rat brain 5HT, it is suggested that this drug could enter platelets by utilizing the 5HT uptake mechanism, at least in vivo. 23 references. (Author abstract modified)

000298 Wilson, C. J.; Juraska, Janice M.; Groves, P. M. Department of Psychology, University of Colorado, Boulder, CO 80309 **Alteration of the neuronal response to amphetamine in the neostriatum by pretreatment with a centrally acting anticholinergic.** Neuropharmacology (Oxford). 16(7/8):455-461, 1977.

Activity of neostriatal neurons was studied in neuronal response to amphetamine administration in rats pretreated with scopolamine or its quaternary analog, methscopolamine. Intraperitoneal injection of (-)scopolamine hydrobromide had no effect upon the firing rate of caudate-putamen neurons recorded in immobilized, locally anesthetized animals, although the patterns of their spike trains over time was somewhat altered. Pretreatment of animals with the same dose of scopolamine, but not with (-)scopolamine methyl brimide, transformed the normally biphasic response of caudate putamen neurons to (+)amphetamine into a response consisting of only a depression of firing rate. A less common response of caudate putamen neurons to amphetamine, a prolonged increase in firing rate, was unaffected by scopolamine pretreatment. The transient initial potentiation of activity seen in most caudate-putamen neurons to precede the amphetamine induced depression of unit activity therefore appears to require the activity of a central muscarinic receptor. Results are discussed in relation to the interaction of dopaminergic and cholinergic systems in the striatum. 25 references. (Author abstract modified)

000299 Wise, Roy A.; Hoffer, Barry J. Lab. of Neuropharmacology, NIMH, St. Elizabeths Hospital, Washington, DC **Equal suppression of cerebellar Purkinje cell activity by amphetamine stereoisomers.** Physiology & Behavior. 18(6):1005-1009, 1977.

Two amphetamine stereoisomers were compared for their ability to reduce spontaneous activity of noradrenoceptive Purkinje cells in the rat cerebellum. The drugs were applied iontophoretically to eliminate peripheral and remote central effects. Responses of Purkinje neurons were summed over several cycles of alternating (plus) and (minus) amphetamine and poststimulus time histograms were compared. Inhibitions of Purkinje cell discharge by the two isomers were not statistically different over a wide range of pipette resistances. These data, taken together with studies showing equal effects of the two isomers on noradrenergic release and reuptake blockade and on locus coeruleus neuronal firing, indicate equipotency of the two isomers in their actions on noradrenergic mechanism. 38 references. (Journal abstract modified)

000300 Wolf, P.; Haas, H. L. Neurochirurgische Universitatsklinik, CH-8091 Zurich, Switzerland **Benzodiazepines, barbiturates, and hippocampal inhibition.** Experientia (Basel). 33(6):810, 1977.

In a paper presented at the 9th annual meeting of the Union of Swiss Societies of Experimental Biology in Zurich, in April 1977, the action of benzodiazepines (BD) and barbiturates (BA) on the GABA mediated recurrent inhibition of hippocampal CA1 pyramidal cells were reported. The inhibitory period was prolonged by systemic BA. Systemic BD did not influence the inhibitory period as an apparent prolongation could not be dissociated from a general decrease in the probability of firing. With population spikes it was possible to demonstrate recurrent inhibition which was potentiated by systemic BD or BA.

000301 Woodruff, G. N.; Watling, K. J.; Andrews, C. D.; Poat, Judith A.; McDermed, J. D. Department of Physiology and Biochemistry, University of Southampton, Southampton SO9 3TU, England **Dopamine receptors in rat striatum and nucleus accumbens; conformational studies using rigid analogues of dopamine.** Journal of Pharmacy and Pharmacology (London). 29(7):422-427, 1977.

To further delineate the structural requirements for dopamine like activity, the actions of dopamine (DA) and of several 2-amino-1,2,3,4-tetrahydronaphthalenes on DA sensitive adenylate cyclase in homogenates of rat striatum and nucleus accumbens were studied. The compounds were also tested for their ability to stimulate motor activity following bilateral injection into the nucleus accumbens of conscious rats. The most active compounds on adenylate cyclase from both striatum and nucleus accumbens were DA and 2-amino-6,7-dihydroxy-1,2,3,4-tetrahydronaphthalene. The 5,6-dihydroxy analogue was much less active in homogenates of both tissues. All of the dihydroxy compounds were active in stimulating motor activity in conscious animals. The two dimethoxy derivatives tested were inactive against adenylate cyclase and as locomotor stimulants. 29 references. (Author abstract modified)

000302 Wright, J. M.; Collier, B. Department of Pharmacology and Therapeutics, McGill University, Montreal, Quebec, Canada **The effects of neomycin upon transmitter release and action.** Journal of Pharmacology and Experimental Therapeutics. 200(3):576-587, 1977.

The site and mechanism of action of neomycin, the most potent of the aminoglycosides, and streptomycin on cholinergic transmission were investigated in rats. These agents depressed the response of rat diaphragm preparations to phrenic nerve stimulation and to injected acetylcholine (ACh), but equally effective neuromuscular blocking concentrations of neomycin, streptomycin or d-tubocurarine reduced the muscle response to injected ACh to 54, 27, and 15% of control, respectively, suggesting that neomycin and streptomycin have a presynaptic effect. This finding was confirmed by measuring ACh release from the diaphragm during phrenic nerve stimulation. Neomycin and streptomycin depressed ACh release to 29 and 41% of control, respectively. In the cat superior cervical ganglion, neomycin blocked ganglionic transmission, did not reduce the response of ganglion cells to injected nicotine and depressed ACh release during preganglionic nerve stimulation to 61% of control in normal ionized Ca medium and to less than 10% of control in low ionized Ca medium. The increased accumulation of 45Ca induced in rat isolated ganglia by preganglionic nerve stimulation was not changed by d-tubocurarine, but was abolished by neomycin. It was concluded that neomycin blocks ACh release by blocking the influx of Ca ions necessary for transmitter release. This conclusion suggested that neomycin should block noradrenaline release, and this was shown using the anococcygeus preparation from the rat. 39 references. (Author abstract modified)

000303 Yanagi, Yugi; Tani, Fumio; Miyoshi, Koho. Kansai Medical School, Osaka, Japan **Neuronal lipofuscin in cen-**

trophenoxine-treated rats. Folia Psychiatrica et Neurologica Japonica (Tokyo). 31(1):103-110, 1977.

The diminution of neuronal lipofuscin in centrophenoxine treated rats was studied, using fluorescent treated as well as ordinary histological methods. A marked decrease of the lipofuscin was observed in the cerebral cortex, hippocampus, thalamus, basal ganglia, midbrain, medulla oblongata and spinal cord. The lipofuscin in the centrophenoxine animals showed fine granular structures in the perikarya of the neurones when compared to that of control rats. Electronmicroscopically, the density of the lipofuscin matrix decreased remarkably, although no obvious diminution of the number of the lipofuscin structures was observed. Enlargement of the vacuolar portions of the lipofuscin was seen in the neurones of the dorsal ganglia. It was concluded that the decrease of the lipofuscin pigment in neurones is not due merely to the arrest or delay of the physiological aging process of pigment accumulation but to some particular lipofuscinolytic process, which would account, in part, for the decrease in lipofuscin following administration of centrofenaxin. 13 references. (Author abstract modified)

000304 Young, W. Scott, III; Bird, Stephanie J.; Kuhar, Michael J. Department of Pharmacology, Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Iontophoresis of methionine-enkephalin in the locus coeruleus area.** Brain Research (Amsterdam). 129(2):366-370, 1977.

To examine cell sensitivity in the locus coeruleus to methionine-enkephalin (ME), cell locations were histologically identified by iontophoresis, amd ME responsiveness of a total of 76 cells in 48 rats were examined. ME produced a rapid, naloxone antagonized inhibition of firing of locus coeruleus and parabrachial nuclei, areas with high densities of opiate receptors. The effects of ME and the distribution of ME sensitive units were quite similar to those found for morphine, and provide support for the hypothesis that the enkephalins are the endogenously occurring counterparts of the opiate drugs and utilize the same receptors. 21 references.

000305 Yu, J. H.; Smith, C. B. Boston University, School of Graduate Dentistry, 100 E. Newton Street, Boston, MA 02118 **Effect of cocaine and desmethylimipramine on the uptake, retention and metabolism of 3H-5-hydroxytryptamine in rat brain slices.** Pharmacology (Basel). 15(3):242-253, 1977.

An in vitro study of the uptake and metabolism of radiolabeled serotonin (5-hydroxytryptamine, 5-HT) and of the effects of cocaine and desmethylimipramine (DMI) on the uptake, retention, and metabolism of 5-HT in rat brain tissue slices is reported. The uptake of 5-HT by neurons was firmly retained, and there were regional differences in the uptake and retention of 5-HT. The caudate nucleus had a significantly greater maximum rate of uptake and binding than did the hypothalamus, brain stem, and parietal cortex, but the lowest apparent affinity for 5-HT uptake. The uptake and retention of 5-HT by the four brain areas were markedly inhibited by cocaine and DMI in vitro. The inhibitory effect of both drugs was noncompetitive in nature, except in the hypothalamus where DMI competitively blocked the uptake of 5-HT. Cocaine and DMI failed to reduce the formation of radiolabeled 5-hydroxyindoleacetic acid, suggesting that a significant quantity of 5-HT is oxidatively deaminated at extraneuronal sites. It is suggested that this extraneuronal metabolism of 5-HT may play an important role in regulating the action of this neurotransmitter. 22 references. (Author abstract modified)

04 MECHANISM OF ACTION: BEHAVIORAL

000306 Adams, Perrie M. Behavioral Science Laboratory, Department of Psychiatry, University of Texas Medical Branch, Galveston, TX 77550 **Effects of anticholinergic and cholinesterase blocking drugs on appetitive behavior under different deprivation conditions.** Life Sciences (Oxford). 21(1):129-136, 1977.

To examine the effects of anticholinergic and cholinesterase blocking drugs on appetitive behavior in rats, varying dosages of scopolamine HBr, methscopolamine bromide, physostigmine sulphate, and neostigmine bromide were studied under four different states of deprivation. The dependent measures were differentiated into two appetitive behaviors: lever pressing for food reward and for water reward. The dosages of both anticholinergic agents were effective in reducing appetitive behavior for food reward. The central acting anticholinergic (scopolamine) alone suppressed appetitive behavior for water reward. The effect of cholinesterase blockade was significantly effected by the locus of action with physostigmine suppressing both forms of appetitive behavior while the effect of peripheral cholinesterase blockade on appetitive behavior was specific to suppressing lever pressing for food reward. There were significant interactions of these agents with the deprivation conditions which were particularly evident in the effects of the less extensive acting drugs. 12 references. (Author abstract modified)

000307 Ahlenius, S.; Engel, J.; Hard, E.; Larsson, K.; Lundborg, P.; Sinnerstedt, P. Department of Pharmacology, University of Goteborg, Fack, S-40033 Goteborg, Sweden **Open field behavior and gross motor development in offspring of nursing rat mothers given penfluridol.** Pharmacology Biochemistry and Behavior. 6(3):343-347, 1977.

Nursing rat mothers were injected with penfluridol, a dopamine receptor blocking agent, at Day 1, 3, 5 and 7 after delivery, and their offspring were investigated at 6 to 18 days of age for various aspects of motor behavior development, and at 4, 8 and 12 weeks of age for open-field behavior. No deficits were found in the development of locomotion, air righting, startle response and eye opening. Open-field ambulation decreased from an abnormally high level at 4 weeks of age to an abnormally low level at 8 and 12 weeks of age. The ability to habituate to an open field decreased from a normal level at 4 weeks of age to an abnormally low level after 8 weeks of age. The behavior deficits were related to a decreased functional activity of the mesolimbic dopamine neuron system, and the possible relation to a clinical dysfunction among children -- minimal brain dysfunction -- was discussed. 22 references. (Author abstract)

000308 Albanus, Lennart; Jonsson, Monica; Sparf, Bengt. Research Department, AB KABI, S-104 25 Stockholm, Sweden **Multiple oral doses of diazepam, oxazepam and phenobarbital to dogs -- behavioural effects and correlation with antipyrine half-life.** Acta Pharmacologica et Toxicologica (Kobenhavn). 40(Supplement 1):63-70, 1977.

The effects of prolonged treatment with phenobarbital, diazepam, and oxazepam on behavior and on the plasma half-life of antipyrine was studied in the dog. In this species the biotransformation of diazepam and oxazepam is known to be very similar to man. After equipotent doses of phenobarbital (25mg/kg) and diazepam (35mg/kg), antipyrine half-life was found to decrease 80 and 40%, respectively, while after treatment with oxazepam (150mg/kg) there was an increase of 20%. The behavioral effects declined in the dogs during the course

of treatment with diazepam but were rather constant during treatment with oxazepam. 16 references. (Author abstract)

000309 Albert, D. J.; Richmond, S. E. Department of Psychology, University of British Columbia, Vancouver, British Columbia V6T 1W5, Canada **Reactivity and aggression in the rat: induction by alpha-adrenergic blocking agents injected ventral to anterior septum but not into lateral septum.** Journal of Comparative and Physiological Psychology. 91(4):886-896, 1977.

Location and transmitter substance of synapses controlling reactivity and aggression in the rat forebrain system were investigated. Intracranial injections were made bilaterally through permanently implanted cannulas ending in the lateral septum or in the region ventral to the anterior septum. Rats were first screened with injections of a local anesthetic, lidocaine, which blocks both synaptic and axonal conduction. Animals that showed an increase in reactivity and aggression were then injected with a synaptic transmitter blocking agent. Results show that blocking agents reproduced the local anesthetic effect only in the region ventral to the anterior septum, and that alpha-adrenergic (phentolamine, tolazoline), but not beta-adrenergic (propanolol, hydralazine), cholinergic (atropine, hyocine), or dopaminergic (haloperidol) blocking agents were effective. Results suggest that synapses in the forebrain system controlling reactivity and aggression are alpha-adrenergic and are located in the region ventral to the anterior septum just lateral to the diagonal band of Broca, and that the septum itself may be involved only to the extent it is traversed by fibers of passage. 39 references. (Author abstract modified)

000310 Alpern, Herbert P.; Greer, Charles A. Department of Psychology, University of Colorado, Boulder, CO 80309 **A dopaminergic basis for the effects of amphetamine on a mouse "preadolescent hyperkinetic" model.** Life Sciences (Oxford) 21(1):93-98, 1977.

To determine if either dopamine or norepinephrine could simulate the attenuating effects of amphetamine found in short sleep (SS) strains of young mice genetically predisposed to high levels of neural excitation and motor activity, 40 30-day-old and 250-day-old mice of the SS strain and the long sleep (LS) strain were administered either clonidine or apomorphine. Apomorphine simulated the effects of amphetamine in SS mice while clonidine did not. Consequently, it appears that a dopaminergic mechanism, which subsequently undergoes a developmental alteration, is mediating the paradoxical antiexcitatory effect of amphetamine. It is suggested that LS and SS mice comprise an effective animal model for the study of preadolescent hyperkinetic syndrome. 28 references. (Author abstract modified)

000311 Altenor, Aidan; DeYoe, Edgar A. Department of Psychology, Lehigh University, Bethlehem, PA 18015 **The effects of DL-p-chlorophenylalanine on learned helplessness in the rat.** Behavioral Biology. 20(1):111-115, 1977.

The effects of DL-p-chlorophenylalanine on learned helplessness in the rat were investigated in two experiments. Experiment 1 investigated the replicability of the learned helplessness effect. For one hour, one group of Long-Evans hooded rats was exposed to a series of inescapable 4.0-mA electric shocks in a restraining tube. Control subjects were simply restrained in the tube. Twenty four hours later, all animals received 20 trials of shock escape in a two way shuttle box. Animals which received prior inescapable shock were significantly slower in escaping from shock than were controls, replicating the learned helplessness effect. Experiment II examined the effect of p-chlorophenylalanine induced depletion of brain serotonin (5-HT) levels on the learned helplessness effect. Thirty two rats were randomly assigned to treatment conditions in a 2 x 2 factorial design: inescapable shock versus no shock pretreatment and drug plus vehicle versus vehicle. Forty eight hours after pretreatment with drug plus vehicle or vehicle, animals received inescapable shock or no shock pretreatment and were tested 24 hr later for shock escape in a two way shuttle-box. PCPA pretreatment increased the subject's reactivity to shock but had no effect upon the learned helplessness phenomenon. 12 references. (Author abstract modified)

000312 Anand, M.; Gupta, G. P.; Bhargava, K. P. Industrial Toxicology Research Centre, Lucknow, India **Modification of electroshock fighting by drugs known to interact with dopaminergic and noradrenergic neurons in normal and brain lesioned rats.** Journal of Pharmacy and Pharmacology (London). 29(7):437-439, 1977.

The effects of various drugs which interact with dopaminergic neurons and with noradrenergic neurons on electroshock induced fighting were studied in normal rats and in rats with lesions in the septum, lateral hypothalamus, or amygdala in order to investigate the involvement of dopamine (DA) and noradrenaline (NA) in the production of aggressive behavior. In nonlesioned animals, reserpine and imipramine reduced electroshock induced fighting responses, while apomorphine, L-dopa, amantadine, and diethyl dithiocarbamate increased the fighting responses. In septal lesioned animals, fighting responses to electroshock were increased as compared with nonlesioned animals. Reserpine decreased the fighting response; however, apomorphine increased the fighting episodes in reserpine treated septal lesioned rats. Animals with lesions in the lateral hypothalamus or amygdala showed a marked decrease in fighting episodes which were not changed by reserpine or reserpine plus apomorphine. It is posited that the data indicate that DA has a facilitatory effect and NA has an inhibitory effect in the production of electroshock induced fighting behavior in rats. 24 references.

000313 Anisman, Hymie. Department of Psychology, Carleton University, Ottawa, Ontario K1S 5B6, Canada **Time-dependent changes in activity, reactivity, and responsivity during shock: effects of cholinergic and catecholaminergic manipulations.** Behavioral Biology. 21(1):1-31, 1977.

A review of problems inherent in the evaluation of the nonassociative effect of shock is presented, and is followed by a series of experiments, in 980 mice intended to evaluate time dependent changes in activity, reactivity (i.e. activity after reintroduction of the stressor) during intershock periods, and activity during shock itself, under conditions where associative influences are minimal. Regardless of whether initial training involved response contingent or noncontingent shock, or whether shock was signaled or unsignaled, a U-shaped reactivity function was observed during the test, with lowest levels of activity occurring 1 to 4 hr after initial training. The U-shaped function was considerably less pronounced if shock was not delivered during the test. The form of the function varied somewhat depending on the presence or absence of a warning stimulus, as well as on whether shock was response dependent or independent. Moreover, the period of lowest reactivity varied as a function of the number of shocks administered during pretraining. Unlike the function seen during intershock periods, activity measured during shock was found to decline monotonically as the test/retest interval increased.

Treatment with scopolamine or physostigmine eliminated both time dependent changes, suggesting involvement of cholinergic mechanisms. Although chlorpromazine eliminated both functions, treatment with d-amphetamine produced several paradoxical effects, precluding definitive conclusions regarding catecholaminergic involvement in the time dependent changes observed. 74 references. (Author abstract)

000314 Baldessarini, Ross J.; Kula, Nora S.; Walton, Kenneth G.; Borgman, Robert J. Mailman Research Center, McLean Hospital, Belmont, MA 02178 **Behavioral effects of apomorphine and diisobutyrylapomorphine in the mouse.** Psychopharmacology (Berlin). 53(1):45-53, 1977.

Stereotyped climbing and clinging responses of the mouse to apormorphine or its ester prodrug, O,O'-diisobutyrylapomorphine were evaluated. Both aporphines produced dose dependent behavioral responses that were blocked by neuroleptics. The duration of action of the ester was much greater than that of apomorphine. The total behavioral response to larger doses of the ester was greater than to apomorphine, evidently reflecting the greater duration of action of the ester. The time course and magnitude of the behavioral effects of both agents corresponded closely with brain levels of apomorphine. The prolonged activity of apomorphine esters as depot prodrug agonists of putative dopaminergic mechanisms in the brain may provide clinically desirable characteristics. 35 references. (Author abstract modified)

000315 Balthazart, J.; Deviche, P.; Hendrick, J. Laboratoire de Biochimie Generale et Comparee et Laboratoire de Radioimmunologie, Universite de Liege, Liege, Belgium **Effects of exogenous hormones on the reproductive behaviour of adult male domestic ducks: II. correlation with morphology and hormone plasma levels.** Behavioural Processes (Amsterdam). 2(2):147-161, 1977.

The effects of exogenous hormones on reproductive behavior in adult male domestic ducks were studied for correlations with morphology and hormone plasma levels. The behavioral effects observed following repeated injections of pregnant mare serum (PMS), human chorionic gonadotropin (HCG), testosterone propionate (TP), oestradiol benzoate (OB) or progesterone (P) were accompanied by significant effects on reproductive morphology and on plasma levels of pituitary gonadal hormones. The testes weight was decreased by TP and P treatment, FSH secretion was inhibited by the three steroid preparations (TB, OB, P) but LH was not suppressed following OB injections (only TP and P were effective in this respect). The behavioral effects are discussed in the light of the present results and a possible unitary mechanism is proposed for the inhibition of social displays by TP, OB and P. Correlations between individual variations of hormone levels and of behavior are presented and shown to be significant in only a few cases. Finally, a tentative model is proposed to explain the endocrine basis of the annual reproductive cycle of male ducks. 36 references. (Author abstract modified)

000316 Balthazart, J.; Deviche, P. Laboratoire de Biochimie Generale et Comparee, Universite de Liege, 17 Place Delcour, B-4020 Liege, Belgium **Effects of exogenous hormones on the reproductive behaviour of adult male domestic ducks: I. behavioural effects of intramuscular injections.** Behavioural Processes (Amsterdam). 2(2):129-146, 1977.

The effects of exogenous hormones on the reproductive behavior of adult male domestic ducks were investigated in ducks given repeated injections of pregnant mare serum (PMS), human chorionic gonadotropin (HCG), testosterone propionate (TP), estradiol monobenzoate (OB) and progesterone (P). The most salient feature of the results was that both gonadotropic hormones had very few effects on behavior. In particular they did not stimulate the social displays which were, on the contrary, inhibited to some extent by the three steroids including TP. Sexual behavior was stimulated to a moderate extent by TP and by OB injections (except for copulation which was unaffected by the latter treatment). These results are discussed in the light of comparable studies in mammals and in relationship to the sequence of behavioral and endocrinological events observed throughout a reproductive cycle of untreated animals. 36 references. (Author abstract)

000317 Barrett, James E. Department of Psychology, University of Maryland, College Park, MD 20742 **Effects of d-amphetamine on responding simultaneously maintained and punished by presentation of electric shock.** Psychopharmacology (Berlin). 54(2):119-124, 1977.

Responding of two squirrel monkeys with a previous history was developed and maintained under a multiple fixed-interval 10 min schedule of food and electric shock presentation. The first response after 10 min produced either food or shock depending on the prevailing stimulus conditions. Subsequent responding maintained by food was suppressed when each 30th response produced shock (punishment). Presentation of the same intensity electric shock under the fixed-interval schedule in the other component continued to maintain high positively accelerated response rates. Although increases in punished responding do not usually occur with d-amphetamine, the drug markedly increased punished responding under these conditions and responding maintained by shock was also increased. It was concluded that the effects of d-amphetamine on punished responding can depend on specific features of the situation in which behavior is studied. 35 references. (Author abstract modified)

000318 Bartus, Raymond T.; Johnson, H. R. Psychopharmacology Section, Warner-Lambert/Parke-Davis Pharmaceutical Research Division, Ann Arbor MI 48106 **Primate information processing under sodium pentobarbital and chlorpromazine: differential drug effects with tachistoscopically presented discriminative stimuli.** Psychopharmacology (Berlin). 53(3):249-254, 1977.

The degree to which sodium pentobarbitol and chlorpromazine (CPZ) differentially reduce the speed or efficiency with which sensory information can be processed was explored. Rhesus monkeys were tested under comparable doses of sodium pentobarbital and CPZ on a visual discrimination problem with varying durations of tachistoscopically presented stimulus information. When unlimited stimulus information was available, no effects of the two drugs were observed at the doses used, but as the duration of stimulus presentation was progressively decreased, the effects of sodium pentobarbital became more severe, whereas CPZ did not differ from the saline control at any presentation duration. While previously published literature indicates that CPZ impairs performance by intermittantly blocking sensory input or transmission, the present data provide the first direct behavioral confirmation that barbiturates impair performance by retarding the rate at which sensory stimuli can be processed and utilized. 29 references. (Author abstract modified)

000319 Beale, J. S.; White, R. P.; Huang, Shang-Po. Department of Pharmacology, University of Tennessee Center for

Health Sciences, Memphis, TN 38163 **EEG and blood pressure effects of TRH in rabbits.** Neuropharmacology (Oxford). 16(7/8):499-506, 1977.

Different doses of synthetic thyrotropin releasing hormone (TRH) were injected into the cisterna magna of curarized rabbits to determine whether this naturally occurring substance induces physiological changes and whether such changes might partially explain the reported analeptic actions of TRH. By this route, TRH in doses ranging from 20ng to 200micrograms produced an EEG activation pattern lasting at least 40 minutes, a rise in blood pressure for approximately 15 minutes, Mayer like waves, and mydriasis. The character of these responses and the potency of TRH support the hypothesis that TRH may be involved in numerous neurophysiological phenomena, and were diametrically opposite to those produced by barbiturates. Pentobarbital and chloropromazine failed to antagonize the basic actions of TRH. Scopolamine completely blocked the electroencephalographic activation caused by TRH, but not the pressor effect. Curarization abolished the hyperthermia observed in noncurarized rabbits. The intracisternal injection of TRH to four noncurarized rabbits also produced electroencephalographic activation, a pressor response, Mayer like waves, and mydriasis. It was concluded that the physiological effects produced by TRH are helpful in explaining the reported analeptic phenomenon. 35 references. (Author abstract modified)

000320 Blozovski, Denise; Cudennec, Annie; Garrigou, Danielle. Laboratoire de Psychophysiologie, Universite Pierre et Marie Curie, 4, Place Jussieu, F-75230 Paris Cedex 05, France **Deficits in passive-avoidance learning following atropine in the developing rat.** Psychopharmacology (Berlin). 54(2):139-143, 1977.

The maturation of cholinergic inhibitory mechanisms that may be involved in passive avoidance learning was studied in rats 14, 17, 21, 25, and 28 days of age. Acquisition and extinction of the conditioned response were were examined under saline and atropine sulfate, and learning was also tested following scopolamine hydrobromide injections in 17-day-old Ss and following alpha-methylatropine in 34-day-old Ss. Acquisition rate increased in normal Ss during ontogenesis, with a significant improvement between postnatal days 17 and 21, whereas extinction rate did not vary with age. Acquisition was impaired by atropine sulfate at all ages, was totally prevented in 14-day-old and 17-day-old Ss, and was completely disrupted by scopolamine in 17-day-old Ss. Extinction following acquisition under atropine was more rapid than after normal acquisition. Methylatropine had no effect. Results supported the hypothesis of central cholinergic mechanisms involved in response suppression, already functioning in the 14-day-old rat and maturing mainly between 17 and 21 postnatal days. 31 references. (Author abstract modified)

000321 Bond, Nigel W.; Di Giusto, Eros L. School of Behavioral Sciences, Macquarie University, North Ryde, N.S.W., 2113, Australia **Prenatal alcohol consumption and open-field behaviour in rats: effects of age at time of testing.** Psychopharmacology (Berlin). 52(3):311-312, 1977.

The effects of age at time of testing on the relation between prenatal alcohol consumption and open field behavior in rats was studied. Throughout gestation pregnant Wistar rats consumed a nutritious liquid diet containing 35% ethanol derived calories. Control mothers were fed lab chow. Subsequently, the offspring of the ethanol fed mothers displayed significantly greater activity (ambulation) in an open-field test at 28 and at 56 days of age, but not at 112 days of age. No differences in defecation were observed at any age. 4 references. (Author abstract modified)

000322 Branch, Marc N.; Nicholson, Gayle; Dworkin, Steven I. Psychology Department, University of Florida, Gainesville, FL 32611 **Punishment-specific effects of pentobarbital: dependency on the type of punisher.** Journal of the Experimental Analysis of Behavior. 28(3):285-293, 1977.

To examine the ability of pentobarbital to increase rates of punished responding using timeout and electric shock punishers, four pigeons were trained to peck a key under a multiple random interval 1 minute, random interval 6 minute schedule of food presentation. Subsequently, over three phases, additions were made during the random interval 1 minute component as follows: pecks during the component occasionally were punished by timeout presentation (Phase 1), timeouts were presented independently of responding during the component (Phase 2), pecks during the component occasionally were punished by electric shock presentation (Phase 3). In Phases 1 and 3, response dependent timeout and shock suppressed responding and established equivalent rates in both components of the multiple schedule. Intermediate doses of pentobarbital increased responding suppressed by electric shock punishment but had little or no effect on responding suppressed by timeout punishment. Response independent presentation of timeouts did not result in suppression of responding (thus showing that response dependent timeout acted as a punisher), and pentobarbital did not reliably increase unpunished responding. It is concluded that pentobarbital's selective punishment attenuating properties depended on the nature of the punisher. 14 references. (Author abstract modified)

000323 Brase, David A.; Loh, H. H.; Way, E. L. Eastern Virginia Medical School, P. O. Box 1980, Norfolk, VA 23501 **Comparison of the effects of morphine on locomotor activity, analgesia and primary and protracted physical dependence in six mouse strains.** Journal of Pharmacology and Experimental Therapeutics. 201(2):368-374, 1977.

In a comparison of the effects of morphine on locomotor activity, analgesia, and primary and protracted physical dependence, mice of six strains (DBA/2J, A/J, C3H, C56BL/6, ICR, and Swiss strains) were studied. The acute administration of morphine resulted in a dos dependent running response in C56BL/6, C3H, ICR and Swiss strains, but no running response in DBA/2J and A/J strains. Strain differences in sensitivity to morphine induced running activity did not parallel differences in sensitivity to antinociception in the abdominal constriction test, but significantly correlated with differences in the expression of physical dependence as measured by either precipitated or abrupt withdrawal jumping behavior in mice made dependent by morphine pellent implantation. Mortality for 3 days of pellet implantation ranged from 5% in ICR mice to 84% in A/J mice. Strain differences in the degree of protracted physical dependence did not parallel the differences in degree of initial physical dependence. These results suggest the possibility that the running response and withdrawal jumping may involve at least part of the same neuronal pathway. This pathway may include dopamine containing neurons which terminate in the neostriatum. 23 references. (Author abstract)

000324 Brown, Judith E.; Kassouny, Margaret; Cross, Joseph K. Department of Food and Nutrition, Florida State University, Tallahassee, FL 32306 **Kinetic studies of food intake and sucrose solution preference by rats treated with low doses of delta9-tetrahydrocannabinol.** Behavioral Biology. 20(1):104-11, 1977.

Time related effects of single low dose levels of delta9-tetrahydrocannabinol (THC) on food and sucrose solution composition of rats were studied. One hour after receiving oral doses of 0.00, 0.25, and 0.40mg/kg, rats were offered free access to wet and dry chow and one of five concentrations of sucrose solution and water. Intakes were recorded after various time intervals during the 24 hr following treatment. Rats treated with THC consumed dry chow at significantly higher rates, during the first hour of feeding, and the strongest sucrose solution, at significantly higher rates during the first half hour of drinking, than controls. Treatment group differences in food and sucrose solution intakes existed throughout the 24 hr period. In both studies, rats treated with the drug initially consumed kilocalories from food and sucrose at higher rates than controls. Rats compensated for early large kilocalorie intakes by decreasing consumption rates later to yield a total 24 hr intake which nearly matched control values. The findings suggest that low doses of THC produce dose and time dependent effects on food and sucrose solution intake and preference and on kilocalorie consumption rates in rats during the 24 hr period following administration of the drug. 6 references. (Author abstract modified)

000325 Browne, Ronald G.; Segal, David S. Department of Psychiatry, School of Medicine, University of California, San Diego, La Jolla, CA 92093 **Metabolic and experiential factors in the behavioral response to repeated amphetamine.** Pharmacology Biochemistry and Behavior. 6(5):545-552, 1977.

The roles of metabolic, situational, and experiential variables in the progressive augmentation of locomotor activity and stereotypy resulting from repeated dextroamphetamine administration were investigated in rats. An enhanced behavioral response was found following multiple daily injections of levoamphetamine and methylphenidate, demonstrating the generality of the reverse tolerance phenomenon. It was also found that brain levels of the false neurotransmitter parahydroxy-norephedrinc are significantly different at 24 hr and 6 days following a single injection of dextroamphetamine, while the behavioral response to a second injection of the drug is similar at both time intervals. It is posited that these findings indicate that metabolic factors such as the formation of false neurotransmitters do not account for the enhanced behavioral responsiveness. Varying the amount of continuous exposure to the experimental environment prior to drug administration and examining the effects of repeated injections of saline or dextroamphetamine in different environments prior to testing in the experimental chambers revealed that the behavioral augmentation is independent of pretreatment condition. It is concluded that neither acclimation to the test chamber nor state dependent conditioning to external stimuli is involved in the augmented behavioral response observed with repeated administration of psychomotor stimulants. 27 references. (Author abstract modified)

000326 Buresova, O.; Bures, J. Institute of Physiology, Czechoslovak Academy of Sciences, Prague, Czechoslovakia **The effect of anesthesia on acquisition and extinction of conditioned taste aversion.** Behavioral Biology. 20(1):41-50, 1977.

The effects of anesthesia on the acquisition and extinction of conditioned taste aversion (CTA) in rats were investigated. CTA was established in adult rats by association of a 15 min access to 0.1% saccharin (CS) with subsequent poisoning (US 0.15 M LiCl). Allobarbital anesthesia maintained during the 5 hr CS US interval did not prevent CTA acquisition which, however, was imparied by cortical spreading depression maintained in the same interval. Anesthesia alone evoked a weak CTA. Intraperitoneal injection of the CS (2% saccharin), followed 30 min later by the US, elicited CTA in the intact rats but not in the rats anesthetized with Nembutal. On the other hand, intraperitoneal application of the CS to CTA trained rats caused similar CTA extinction, both in anesthetized and unanesthetized animals. Intraperitoneal administration of the CS to rats anesthetized animals. Intraperitoneal administration of the CS to rats anesthetized with urethane elicited EEG arousal, lasting 1 to 2 min in CTA trained rats, but had no effect in naive animals. It is concluded that anesthesia blocks the initial formation of the short-term gustatory trace, but does not prevent its association with poisoning or extinction of the already established CTA. 11 references. (Author abstract modified)

000327 Campbell, Byron A.; Randall, Patrick J. Department of Psychology, Green Hall, Princeton University, Princeton, NJ 08540 **Paradoxical effects of amphetamine on preweanling and postweanling rats.** Science. 195(4281):888-891, 1977.

The paradoxical effects of amphetamine on 160 preweanling and postweanling rats were studied to explore the effects of stimulants in minimal brain dysfunction (MBD) and kyperkinesis in children. In contrast to its effect on adult rats, amphetamine administered to preweanling rats in the presence of an anesthetized adult produced no visible increase in motor activity. Instead, it appeared to enhance the normal tendency of neonatal rats to approach and maintain contact with conspecifics. In postweanling rats amphetamine disrupted the tendency to aggregate and produced an increase in behavioral activity comparable to that seen in adult rats. It is suggested that findings may constitute the basis for an animal model of MBD hyperkinesis. 10 References. (Author abstract modified)

000328 Cannizzaro, G.; Provenzano, P. M.; Brucato, A.; Gianguzza, S. Dept. of Pharmacology, University of Palermo, Palermo, Italy **Influence of the suspension of continued treatment with flurazepam and amobarbital on two discrimination learning schedules.** Psychopharmacology (Berlin). 53(3):243-247, 1977.

The effect of the suspension of chronic treatment with flurazepam and amobarbitol on the operant behavior of rats that for the first time were in the presence of two fixed-interval discrimination learning schedules is examined. The response emitted by the treated animals under the sound discrimination schedule had characteristics similar to those of control animals. Under the temporal discrimination schedule, though it is not possible to distinguish between learning rates, modifications in the intensity of the effect indicated that the action of flurazepam was slight, whereas that of amobarbital was clear and statistically significant. 9 references. (Author abstract modified)

000329 Canon, Jeffrey G.; Lippa, Arnold S. CNS Disease Therapy Section, Department 935, Lederle Laboratories, Pearl River, NY 10965 **Use of DRL in differentiating anxiolytic and neuroleptic properties of CNS drugs.** Pharmacology Biochemistry and Behavior. 6(5):591-593, 1977.

The effects of chlorpromazine, clozapine, dextroamphetamine, and diazepam on differential reinforcement of low rates (DRL) of responding were investigated in rats to determine the usefulness of the DRL procedure in differentiating anxiolytic and neuroleptic properties of CNS drugs. Dextroamphetamine and diazepam, which showed similar effects on response errors, could be identified on the basis of burst responding and drug interaction. Clozapine, an antipsychotic agent which does not cause extrapyramidal side-

effects in man, affected DRL behavior in the same way as did chlorpromazine. It is suggested that DRL schedules are probably not useful in differentiating various neuroleptic agents. 10 references. (Author abstract modified)

000330 Canon, Jeffrey G.; Lippa, Arnold S. CNS Disease Therapy Section, Department 935, Lederle Laboratories, Pearl River, NY 10965 **Effects of clozapine, chlorpromazine and diazepam upon adjunctive and schedule controlled behaviors.** Pharmacology Biochemistry and Behavior. 6(5):581-587, 1977.

The effects of clozapine upon behavior controlled by two distinct schedules of reinforcement were studied and compared with those of chlorpromazine and diazepam in an attempt to delineate specific behavioral profiles for each type of drug. Two groups of rats were trained to press a lever for food reinforcement under either a fixed-ratio 20 (FR 20) or a fixed-interval 2 min (FI 2 min) schedule. During the FI 2 min schedule a measure of adjunctive behavior (drinking) was taken. Each group then received various doses of chlorpromazine, clozapine, or diazepam in a random order. All three drugs reliably reduced FR 20 response rates in a dose dependent manner, with chlorpromazine and clozapine being more effective than diazepam. Chlorpromazine reduced FI 2 min response rates, especially in the terminal portions of the fixed-intervals, while diazepam generally elevated rates, primarily in the midportion of the interval. Clozapine produced a less defined effect on overall responding. All three drugs affected index of curvature. Only chlorpromazine was able to reliably reduce the occurrence of adjunctive behavior and reinforcements. 18 references. (Author abstract modified)

000331 Carlini, E. A. Dept. de Psicobiologia, Escola Paulista de Medicina, Rua Botucatu, 862, 04023 Sao Paulo, Brazil **Further studies of the aggressive behavior induced by delta9-tetrahydrocannabinol in REM sleep-deprived rats.** Psychopharmacology (Berlin). 53(2):135-145, 1977.

The aggressive behavior induced by delta9-tetrahydrocannabinol (delta9-THC) in pairs of REM sleep deprived rats was studied in five experiments by measuring dominant and submissive behavioral patterns. When 2 REM deprived rats received delta9-THC, one of the animals displayed very aggressive postures, while its partner assumed incomplete defensive postures. The intensity of these behavioral postures was dose dependent. In pairs composed of one REM deprived rat injected with delta9-THC and one normal or one REM deprived partner injected with control solution the deprived/drugged rat showed an aggressive posture and catatonia, or a strikingly bizarre behavior, while the control partner displayed typical defensive postures. The behavioral alterations induced in REM deprived rats by amphetamine, LSD-25, and pentobarbital failed to provoke defensive postures in the normal rats paired with them; however, apomorphine partially mimicked the delta9-THC effects. It is concluded that in REM deprived rats delta9-THC not only provokes aggressive behavior but also impairs the defensive/submissive behavioral patterns. 20 references. (Journal abstract)

000332 Carney, John M.; Rosecrans, John A. Department of Pharmacology, Medical College of Virginia, Richmond, VA 23298 **Barbital-induced changes in sensitivity to the behavioral effects of narcotics.** Pharmacology Biochemistry and Behavior. 6(5):589-590, 1977.

The effects of daily administration of barbital, which is metabolized only to a limited extent, on sensitivity to the behavioral suppressive effects of methadone or morphine on schedule controlled responding in rats were studied. Animals trained to respond under a variable interval (VI) 15 sec schedule of sweetened milk reinforcement were tested with doses of morphine and methadone before and after the development of tolerance to barbital. Barbital tolerant rats were tolerant to the effects of methadone on VI responding but were not tolerant to the effects of morphine. The data suggest that tolerance to some narcotics can develop after chronic exposure to drugs other than those of the same pharmacologic class. The data also indicates the desirability of considering changes in the pharmacokinetics of a narcotic as a possible explanation for the development of tolerance to the behavioral effects of the drug. 11 references. (Author abstract modified)

000333 Castellano, Claudio. Laboratorio di Psicobiologia e Psicofarmacologia, C.N.R., 1 via Reno, I-00198 Roma, Italy **Effects of chlorpromazine and imipramine on discrimination learning, consolidation, and learned behavior in two inbred strains of mice.** Psychopharmacology (Berlin). 53(1):27-31, 1977.

To evaluate effects of chlorpromazine and imipramine on discrimination learning, consolidation, and learned behavior in the mouse, chlorpromazine and imipramine were administered to DBA/2J and C57BL/6J mice swimming in a Y water maze toward a light source or towards the dark. In two sets of experiments the drugs were administered to naive mice before and after each training session, respectively. In both strains, in the pretrial experiments, the innate tendencies were improved by both drugs; the acquisition of a new pattern of behavior was improved following imipramine but impaired following chlorpromazine. In the posttrial experiments the consolidation processes of both strains were improved following imipramine and impaired following chlorpromazine. In a third set of experiments imipramine was administered to previously trained mice of both strains and chlorpromazine to previously trained C57 mice. In both procedures the administration of increasing doses of both drugs was followed by a progressive lengthening of the swimming times in the previously trained C57 mice; performance disruptions were evident in both procedures in trained DBA mice following imipramine. 19 references. (Author abstract modified)

000334 Cazala, Pierre; Cardo, Bernard. Laboratoire de Psychophysiologie, Institut de Biologie animale, Universite de Bordeaux I -- Avenue des Facultes 33405, Talence Cedex, France **Effects of apomorphine on self-stimulation behaviour in dorsal and ventral area of lateral hypothalamus in mice.** Pharmacology Biochemistry and Behavior. 6(3):363-365, 1977.

The effects of apomorphine on self-stimulation behavior in the dorsal and ventral areas of the lateral hypothalamus were studied in mice. Intraperitoneal injections of low doses of apomorphine, a dopaminergic receptor agonist, depressed briefly, and then enhanced self-stimulation behavior in the dorsal area of lateral hypothalamus. In contrast, only depressant effects were observed in the ventral area. These differential effects suggest the presence of a dopaminergic component in the dorsal hypothalamic self-stimulation system. 11 references. (Author abstract)

000335 Chambers, D. M.; Jefferson, G. C. Pharmacology Section, Department of Pharmacy, Heriot-Watt University, 79 Grassmarket, Edinburgh EH1 2HJ, Scotland **Some observations on the mechanism of benzodiazepine-barbiturate interactions in the mouse.** British Journal of Pharmacology (London). 60(3):393-399, 1977.

The prolongation of pentobarbitone sleeping times by five benzodiazepines, administered by prior intraperitoneal injection, was measured in mice. The pentobarbitone was injected either intraperitoneally or intracerebroventricularly. For each benzodiazepine, the prolongation was dose related and differences in potency between benzodiazepines were not marked. The percentage prolongation of sleeping times produced by most of the benzodiazepines was greater when the pentobarbitone was given intracerebroventricularly and was explained by a preferential addition of CNS depressant effects associated with this route. To test whether the action of intraperitoneally administered pentobarbitone had been influenced by a metabolic component, the effects of nitrazepam on drug metabolism, measured by changes in plasma phenazone levels in the mouse, were studied. Nitrazepam produced a 23% reduction in the rate of phenazone metabolism. Nitrazepam was also shown to have produced a transient fall in body temperature. Calculations based on Q10 values suggested that this hypothermia accounted, at most, for half the metabolic change measured. 29 references. (Author abstract)

000336 Claiver, Ronald M.; Fibiger, Hans C. Department of Anatomy, Northwestern University Medical School, 303 E. Chicago Ave., Chicago, IL 60201 **On the role of ascending catecholaminergic projections in intracranial self-stimulation of the substantia nigra.** Brain Research (Amsterdam). 131(2):271-286, 1977.

The role of ascending dopaminergic (DA) and noradrenergic (NA) neurons in the rewarding effects of intracranial self-stimulation (ICSS) was obtained from electrodes in the zona compacta of the substantia nigra (SNC) was investigated in rats trained on a bar-press response to obtain ICSS. Ss then received 6-hydroxypdopamine (6-OHDA) lesions of the DA nigrostriatal bundle (NSB) either ipsilateral or contralateral to the electrodes. Alpha-methyl-p-tyrosine and d-amphetamine were administered to assess their effects in lesioned and control Ss. Findings indicated that deficits in responding for ICSS produced by unilateral 6-OHDA lesions of the NSB can be explained by transient motor deficits produced from these lesions. The data indicated that the NSB is not the critical neuronal substrate which mediates rewarding properties of nigral ICSS. This system serves a nonessential modulatory function and is involved in the rate increasing effects of d-amphetamine on nigral ICSS. No evidence for a role of ascending NA systems in nigral ICSS was obtained. 37 references. (Author abstract modified)

000337 Cohn, M. L.; Cohn, M. Department of Anesthesiology, Magee-Womens Hospital, University of Pittsburgh School of Medicine, Pittsburgh, PA 15213 **Comparison of the regulation of rotational behavior by hypothalamic oligopeptides.** Psychoneuroendocrinology (Oxford). 2(2):197-202, 1977.

The role of the hypothalamic polypeptides luteinizing hormone releasing hormone (LHRH), melanocyte stimulating hormone release inhibiting factor (MIF), substance P, and glutathione (GSH) in rotational behavior was studied in rats. Central injection of MIF and GSH led to no noticeable alteration of locomoter activity, but LHRH and substance P produced barrel rotations to the left. MIF and GSH did not change the typical stereotyped behavior caused by apomorphine or the blephartosis, hunchbacked posture and long-lasting marked sedation caused by reserpine. After apomorphine pretreatment, LHRH and substance P produced three consecutive behavioral events: 1) head to tail rotations; 2) barrel rotations to the left; and 3) head to tail rotations. After pretreatment with reserpine, LHRH and substance P produced head to tail rotations followed by barrel rotations and then counterclockwise rotations again. In rats pretreated with apomorphine or reserpine and subsequently injected centrally with thyrotropin releasing hormone, LHRH, substance P, or somatostatin, haloperidol or pimozide inhibited head to tail rotations but did not alter barrel rotations. In contrast, atropine blocked barrel rotations which changed to head to tail rotations. The results suggest that neurohormones and substance P act as modifiers of neurotransmission in the CNS. 14 references.

000338 Colpaert, F. C.; Niemegeers, C. J. E.; Janssen, P. A. J. Janssen Pharmaceutica Research Laboratories, B-2340 Beerse, Belgium **Effects of alpha-methyl-p-tyrosine, adrenolytic compounds, pimozide and other neuroleptics, on the narcotic cue.** Archives Internationales de Pharmacodynamie de Therapie (Ghent). 225(2):308-316, 1977.

The effects of alpha-methyl-p-tyrosine, adrenolytic compounds, pimozide, and other neuroleptics as antagonists to narcotics in rats were studied. Using a two lever food reinforced operant procedure, 11 rats were trained to discriminate the narcotic analgesic fentanyl from saline. In rats so trained, alpha-methyl-p-tyrosine was found not to affect the discriminability of fentanyl. Pretreatment with either adrenolytic compounds (aceperone, dibenamine, phenoxybenzamine, and propranolol) or sedative neuroleptics (azaperone, chlorpromazine, pipamperone) likewise failed to attenuate the narcotic cue. Pimozide and, to some extent, spiperone reduced the percentage of responding on the selected lever, and pimozide antagonized drug lever selection in some animals. The results suggest that specific neuroleptics (e.g. pimozide) may affect the subjective effects induced by narcotics in humans. 45 references. (Author abstract modified)

000339 Consroe, Paul F.; Wolkin, Andrea L. College of Pharmacy, University of Arizona, Tucson, AZ 85721 **Anticonvulsant interaction of cannabidiol and ethosuximide in rats.** Journal of Pharmacy and Pharmacology (London). 29(8):500-501, 1977.

The interactive anticonvulsant effect of cannabidiol (CBD) a major component of marihuana, and ethosuximide against leptazol induced minimal (clonic) seizures in rodents is reported, as is data on the interactive effects of ethosuximide and SKF 525A, an inhibitor of hepatic microsomal enzymes. Although CBD had been shown to have a dose response anticonvulsant activity in laboratory animals and to be devoid of typical marihuana like psychoactivity in man, ethosuximide has failed to elicit a graded dose response effect in either electrically or sound induced seizures in rats. Oral or intravenous CBD given concurrently with ethosuximide orally, reduced the anticonvulsant activity of the latter drug, suggesting that this interaction may not be wholly explained by CBD'S action on the liver or gastrointestinal system. Collaterally, ethosuximide is not significantly bound to plasma protein, theoretically eliminating competition for the lipoprotein binding sites with CBD. 10 references.

000340 Cools, A. R. Department of Pharmacology, University of Nijmegen, Nijmegen, The Netherlands **Distinct dopaminergic mechanisms within the nucleus accumbens of rats and behaviour.** Brain Research (Amsterdam). 127(2):375-376, 1977.

Researches indicating the existence of two distinct dopaminergic mechanisms within the rat nucleus accumbens were reviewed and the behavioral role of the nucleus accumbens in behavior was discussed in a paper presented at the 8th Annual Meeting of the European Brain and Behaviour Society

in Copenhagen, August 1976. The findings indicate that both the neostriatum and the nucleus accumbens contain at least two functionally opposing dopaminergic mechanisms having pharmacological properties comparable to those of the two dopaminergic systems within the feline brain. The nucleus accumbens contains a dopaminergic mechanism (= DAe system) stimulation of which results in a short-term increase in the locomotor activity. Dopamine, amphetamine and apomorphine stimulate this system, whereas low doses of haloperidol and only high doses of ergometrine and 3,4-dihydroxy-phenylamino-2-imidazoline (DPI) inhibit this system. The nucleus accumbens also contains a dopaminergic mechanism (DAi system) stimulation of which results in a long-term suppression of the locomotor activity; both dopamine and low doses of DPI stimulate this system, whereas low doses of ergometrine and only high doses of apomorphine inhibit this system. In addition, the two systems differ in the following respect: inhibitors of the DAi system produce their effects, which are long-lasting, after a latency of about 30 to 60 min, whereas inhibitors of the DAe system produce their effects, which are short lasting, without any delay. This difference together with the finding that amphetamine and cocaine induced locomotor activity is suppressed by stimulation of the DAi system was discussed in view of the modulatory role of noradrenaline within this nucleus. A second set of experiments has shown that the DAi system has a differential influence upon the effects elicited by systemically given apomorphine: it inter alia increases the sniffing behavior, whereas it inter alia suppresses the gnawing and licking behavior. These and related data were discussed in light of the literature on the behavioral role of the nucleus accumbens. 3 references. (Author absract modified)

000341 Cools, A. R.; Broekkamp, C. L. E.; Van Rossum, J. M. University of Nijmegen, Geert Grooteplein Noord 21, Nijmegen, The Netherlands **Subcutaneous injections of apomorphine, stimulus generalization and conditioning: serious pitfalls for the examiner using apomorphine as a tool.** Pharmacology Biochemistry and Behavior. 6(6):705-708, 1977.

The extent to which stimulus generalization and conditioning occurs in rats having received an injection of apomorphine is investigated. Stimulus generalization occurs in rats conditioned by a single injection of apomorphine. The data suggest that apomorphine initially acts as an unconditioned stimulus of an unconditioned response (UCR) that, in turn, produces stimuli which become conditioned stimuli of a conditioned response having a nature identical to that of the UCR. Behavior elicited by a subcutaneous injection of apomorphine depends on the part of the body selected for administration. The properties that should be taken into account when apomorphine is used as a tool in studies on brain and behavior are discussed from a methodological point of view. 25 references. (Journal abstract)

000342 Coward, D. M.; Doggett, N. S.; Thomas, J. E. Applied Pharmacology Laboratories, Welsh School of Pharmacy, UWIST, King Edward VII Avenue, Cardiff, England **Central transmitter involvement in LON-954-induced tremorogenesis.** Neuropharmacology (Oxford). 16(7/8):479-484, 1977.

The effect of N-carbamoyl-2-(2,6-dichlorophenyl)acetamidine hydrochloride (LON-954) induced tremor of various agents that alter central neurotransmitter levels was examined in order to elucidate the mechanism of action of LON-954, using an intracerebroventricular injection technique. Effects of both established and putative transmitter substances were examined. LON-954 induced tremor in mice was potentiated by pretreatment with alpha-methyl-p-tyrosine or reserpine. Reserpine also prolonged tremor duration. Pretreatment with 5-hydroxytryptophan, p-chlorophenylalanine, or cyproheptadine failed to influence tremor production. Tremor was reduced in a dose dependent manner after the intracerebroventricular injection of dopamine, apomorphine, noradrenaline, clonidine, and (+)-amphetamine 5 minutes before LON-954. Serotonin produced some antagonism after administration, but this was not dose dependent. Centrally administered gamma-aminobutyric acid or histamine had no effect on LON-954 induced tremor. The convulsant properties of pentetrazol were potentiated by LON-954, while those of picrotoxin were unaffected. It is suggested that LON-954 induced tremor is produced by a decrease in functional dopamine levels while additional effects on serotoninergic and noradrenergic systems may exacerbate this tremor. 26 references. (Author abstract modified)

000343 Curzon, G.; Marsden, C. A. Department of Neurochemistry, Institute of Neurology, Queen Square, London WC1N 3BG, England **Role of tryptamine in the behavioural changes caused by a monoamine oxidase inhibitor and L-tryptophan.** British Journal of Pharmacology (London). 60(2):307P-308P, 1977.

The role of tryptamine in the behavioral changes caused by the monoamine oxidase inhibitor, tranylcypromine (TC) and L-tryptophan (TP) was studied in rats. The increase of locomotor activity after TC was greatly enhanced by TP. Addition of tryptamine further increased locomoter activity but increased the behavior score (head weaving, forepaw treading, hind limb abduction, and Straub tail) more strikingly. Brain 5-hydroxytryptamine (5-HT) and tryptamine rose after TP, and tryptamine increased further when it was also given. The results suggest that the tryptamine changes after TC + TP are sufficient to influence behavior. Increasing the TP dose increased locomotor activity slightly, but the behavioral score increased considerably in association with slight and considerable rises of brain 5-HT and tryptamine, respectively. It was concluded that increased brain tryptamine on given TP after TC may alter behavior. However, the effect of tryptamine appears to require 5-HT because the behavioral effects of TC + tryptamine are partly prevented by the tryptophan hydroxylase inhibitor p-chlorophenylalanine. 5 references.

000344 Cutler, Margaret G. Department of Biological Sciences, Glasgow College of Technology, North Hanover Place, Glasgow, G4 0BA, Scotland **Effects of exposure to lead on social behaviour in the laboratory mouse.** Psychopharmacology (Berlin). 52(3):279-282, 1977.

Ethological analysis was employed to study the behavioral effects produced by exposure of mice to lead salts from infancy. Mother mice of the treated group received 0.1% lead acetate as their sole drinking fluid within 24 h after the birth of their litters and the offspring received this fluid from weaning. At 8 weeks, encounters between pairs of unfamiliar mice from the same treatment group and of the same sex were examined by ethological techniques. The frequency and duration of social and sexual investigation was significantly lower in lead treated mice of both sexes than in their controls. In lead treated males, agonistic behavior was also reduced. These effects were due to a reduction in the frequency of several postural elements within each of the categories. Body weight gain was not affected by treatment with lead at this dose level and there were no signs of hyperactivity. The average lead content of the brains was found to be 2.45 nmol/g in the control group and 4.38 nmol/g in the group given lead acetate. 10 references. (Author abstract modified)

000345 Davis, Michael; Walters, James K. Yale University School of Medicine, 34 Park Street, New Haven, CT 06508 **Psilocybin: biphasic dose-response effects on the acoustic startle reflex in the rat.** Pharmacology Biochemistry and Behavior. 6(4):427-431, 1977.

The biphasic dose response effect of psilocybin and psilocin on the acoustic startle reflex in the rat was investigated. Low doses of psilocybin increased startle amplitude and high doses depressed it. Low or high doses of psilocin also had a biphasic dose response effect on startle reflex comparable in magnitude to equimolar doses of psilocybin. The results indicate that this biphasic relationship on startle is consistent with the hypothesis that startle is increased when the firing rates of midbrain raphe neurons are selectively inhibited but is depressed when neurons postsynaptic to raphe cells are also inhibited. 31 references. (Author abstract modified)

000346 Delacour, J.; Echavarria, M. T.; Senault, B. Psychophysiologie, Universite Paris VII, 7 Quai Saint-Bernard, F-75005 Paris, France **Specificity of learning deficits produced by micro-injections of 6-OHDA into the nigro-striatal system of the rat.** Brain Research (Amsterdam). 127(2):384-385, 1977.

The results of a series of investigations undertaken to elucidate the specificity of learning deficits produced by microinjections of 6-hydroxydopamine (6-OHDA) into the nigrostriatal system (NS) of the rat were presented at the 8th Annual Meeting of the European Brain and Behaviour Society in Copenhagen, August, 1976. Microinjections of 6-OHDA into the NS impair acquisition of an active (locomotor) avoidance response in a two-way shuttlebox, even when a special postoperative treatment insures a normal state of nutrition in the experimental rats. Selective tests of locomotor activity and direct observations of the rats during avoidance training revealed no motor disturbances. Doses of 6-OHDA which impair acquisition of an active avoidance response produce nonspecific lesions. Therefore, behavioral effects of these doses cannot be entirely ascribed to selective destruction of the NS. On the other hand, a parametric study showed that the size of nonspecific 6-OHDA lesions of the NS was significantly smaller than that of electrolytic lesions inducing the same learning deficits. 1 reference. (Author abstract modified)

000347 Delini-Stula, A.; Vassout, A.; Maitre, L. Biologische Abteilung, CIBA-GEIGY AG, CH-4002 Basel, Switzerland **Effects of baclofen and muscimol on nigro-striatal dopaminergic functions.** Experientia. 33(6):803, 1977.

In a paper presented at the 9th annual meeting of the Union of Swiss Societies of Experimental Biology in Zurich, April 1977, the effects of baclofen and muscimol on various behaviors functionally linked to the nigrostriatal dopaminergic system were reported. Both compounds marginally blocked discriminatory avoidance response in cats, while this effect was greatly enhanced by alpha-methyltyrosine. Effects were studied in relation to the cataleptic and amphetamine antagonistic action of haloperidol. Some of the observed effects of baclofen and muscimol are similar to the GABA like inhibitory action on dopaminergic transmission. Additionally, baclofen exerts other effects on striatal functions independent of the assumed gabergic feedback loop.

000348 DeWeese, Jo. Laboratory of Psychobiology, Department of Psychiatry, Harvard Medical School, 25 Shattuck Street, Boston, MA 02115 **Schedule-induced biting under fixed-interval schedules of food or electric-shock presentation.** Journal of the Experimental Analysis of Behavior. 27(3):419-431, 1977.

Hose biting behavior of lever pressing squirrel monkeys induced by fixed interval schedules of food or electric shock presentation was studied. Both schedules induced repeated biting on a latex hose. Whether lever pressing was controlled by food or by electric shock, a pattern of decreasing hose biting and increasing lever pressing occurred within fixed interval cycles. As the fixed interval duration was increased from 6 to 600 sec, average rates of lever pressing decreased under both schedules. Average rates of hose biting first increased with increasing parameter value, reaching a maximum at values that varied from 60 to 337 sec in different monkeys, and then declined at higher values. D-Amphetamine at appropriate doses increased overall rates of lever pressing maintained by food or by shock, but either did not affect or decreased overall rates of hose biting. When no timeout period occurred between fixed interval cycles, the monkeys bit most frequently immediately after food or electric shock was presented. When there was a timeout period, hose biting began shortly after the start of the fixed-interval cycles, with little or no hose biting immediately after food or electric shock was presented. Most hose biting appeared to be schedule induced rather than food induced or shock induced. 58 references. (Journal abstract modified)

000349 Dickinson, William A.; Levitt, Robert A. Department of Psychology, Southern Illinois University, Carbondale, IL 62901 **Carbachol-elicited mouse-killing in the rat: animals attacked and wound location.** Physiological Psychology. 5(2):239-242, 1977.

The aggressive behavior of rats converted to mousekilling by lateral hypothalamic injections of carbachol was investigated and the stereotypy of the attacking behavior was evaluated by studying the distribution of the wounds on the bodies of the mice. Mousekilling was elicited in naturally nonkiller rats. These carbachol converted killers also attacked rat pups and adult rats during the period of drug action. The wounds were distributed more widely over the bodies of mice attacked by carbachol converted killers than by natural killers. It is concluded from these results that carbachol elicited killing is similar to affective or irritable aggression. 15 references. (Author abstract modified)

000350 Downs, David A.; Braude, Monique C. Warner-Lambert/Parke-Davis, Pharmaceutical Research Div., Ann Arbor, MI 48106 **Time-action and behavioral effects of amphetamine, ethanol, and acetylmethadol.** Pharmacology Biochemistry and Behavior. 6(6):671-676, 1977.

The effects of d-amphetamine, ethanol, and acetylmethadol (LAAM) on operant responding at various time intervals after drug administration in monkeys were investigated. As time increased between drug administration and the start of experimental sessions, effects of drugs on food maintained responding in rhesus monkeys increased to a maximum and then decreased. d-Amphetamine, ethanol, and LAAM generally decreased high response rates in one component of a chain schedule, while very low response rates in another component were increased reliably only by ethanol. The time of peak LAAM and ethanol concentrations in blood or plasma corresponded with or overlapped the time of maximal behavioral effect, while the time of maximal behavioral effect with d-amphetamine occurred somewhat prior to the time of peak plasma amphetamine concentration. With d-amphetamine and perhaps with ethanol, effects on operant responding were greater after 30 min pretreatment intervals than after 6 hr pretreatment intervals despite higher plasma or blood concentrations at 6 hours than at 30 min. 28 references. (Journal abstract)

000351 Dunai-Kovacs, Zsuzsa; Szekely, J. I. Research Institute for Pharmaceutical Chemistry, P.O. Box 82, H-1325 Budapest, Hungary **Effect of apomorphine on the antinociceptive activity of morphine.** Psychopharmacology (Berlin). 53(1):65-72, 1977.

Apomorphine pretreatment was seen as potentiating the analgesic effect of morphine in a dose dependent manner both in rats and in mice measured by five different tests (writhing, hot plate, inflamed foot, tail pinch and tail flick procedures). Furthermore, apomorphine augmented the antinociceptive activity of morphine in tolerant animals as well. In morphine dependent mice the nalorphine precipitated jumping, a withdrawal symptom, was found inhibited by apomorphine treatment. The results are discussed in the light of the numerous but contradictory data available in the literature. 49 references. (Author abstract)

000352 Dunn, Adrian J.; Leibmann, Susan. Department of Neurosciences, University of Florida College of Medicine, Gainesville, FL 32610 **The amnestic effect of protein synthesis inhibitors is not due to the inhibition of adrenal corticosteroidogenesis.** Behavioral Biology. 19(3):411-416, 1977.

Nakajima's state dependency hypothesis that the amnesia caused by protein synthesis inhibitors is due to lack of adrenal corticosteroidogenesis was tested by assessing the effects of three drugs (dexamethasone, aminoglutethimide, and cortexolone) with two protein synthesis inhibitors (cycloheximide and anisomysin). Elipten, (aminoglutethimide) at doses that inhibited the adrenal production of corticosterone in response to adrenocorticotrophic hormone (ACTH), did not cause amnesia for passive avoidance in mice. The drug was administered either 5 or 30 min prior to training, and mice were tested 24 hr later. Similarly, amnesia was not produced by either dexamethasone, a potent synthetic glucocorticoid, at doses that inhibit ACTH secretion, or by cortexolone, which competes for glucocorticoid receptors but which has no glucocorticoid activity. It was concluded that the amnesia caused by protein synthesis inhibitors does not depend on the lack of an adrenal corticosteroidogenic response during or shortly after training. 18 references. (Author abstract modified)

000353 Eliasson, Mona; Meyerson, B. J. Department of Medical Pharmacology, University of Uppsala, Uppsala, Sweden **The effects of lysergic acid diethylamide on copulatory behaviour in the female rat.** Neuropharmacology (Oxford). 16(1):37-44, 1977.

The effects of LSD on lordotic behavior in female Sprague-Dawley rats and male Wistar rats were studied. Lordotic behavior is dependent on both serotonin and dopamine function. The female rats were ovariectomized and lordotic behavior was induced by estradiol benzoate s.c. followed 48 hr later by progesterone s.c. The effect of LSD was studied about 6 hr after the progesterone injection. Other types of behavior observed in the female rat under the same hormonal conditions were locomotor activity, vocalization in response to being touched by the male, and startle response to noise. LSD inhibited lordosis response in a dose dependent manner, maximum effect being obtained at a 10 min and normal behavior returning at the end of 3 hr. p-Chlorophenylalanine (PCPA), an inhibitor of serotonin synthesis, increased lordosis responding and potentiated the inhibitory effects of LSD on lordosis. Alpha-methyl-p-tyrosine (AMPT), a tyrosine hydroxylase inhibitor, increased lordotic behavior and caused transient potentiation of LSD effects. LSD caused increasing loss of habituation to the startle response. PCPA potentiated this effect of LSD, while AMPT had no effect. LSD increased vocalization in the mating situation and PCPA and AMPT potentiated this increase but had no effect alone. Frequency of lordosis correlated negatively with frequency of vocalization. LSD, PCPA, and AMPT all significantly reduced locomotor activity. The data suggest that certain effects of LSD could be related to increased serotonin activity. 23 references.

000354 Ellins, Stuart R.; Catalano, Sonja Marie; Schechinger, Sheryl A. Department of Psychology, California State College, San Bernardino, CA 92407 **Conditioned taste aversion: a field application to coyote predation on sheep.** Behavioral Biology. 20(1):91-95, 1977.

The effect of conditioned taste aversion in coyotes on the number of sheep killed and the effects of the continued presence or absence of toxic and nontoxic baits on the conditioned prey aversions were studied. Predation by free ranging coyotes (Canis latrans) on two sheep herds was inhibited by a procedure in which sheep carcasses laced with toxic lithium chloride were placed adjacent to the herds. When the lithium chloride bait was removed or replaced with nontoxic sodium chloride bait, bait takes and suppression of attacks on live prey continued. The blocking of attack behavior had not extinguished after nine weeks at the termination of the study. It is concluded that the taste aversion method is a useful tool in controlling coyote predation on domestic animals. 7 references. (Author abstract modified)

000355 Elliott, P. N. C.; Jenner, P.; Huizing, G.; Marsden, C. D.; Miller, R. King's College Hospital Medical School, Denmark Hill, London, England **Substituted benzamides as cerebral dopamine antagonists in rodents.** Neuropharmacology (Oxford). 16)5):333-342, 1977.

The ability of the substituted benzamides metoclopramide, sulpiride, tigan and clebopride and its debenzylated metabolite (DP), to act as dopamine agents in rodents was compared. All compounds inhibited apomorphine induced circling in animals with unilateral nigrostriatal lesions; all except tigan inhibited the apomorphine induced reversal of reserpine akinesia; and all induced some degree of catalepsy. The potency of the compounds in these behavioral experiments ranked in the order: clebopride, metoclopramide, sulpride, tigan and DP. Striatal and mesolimbic homovanillic acid (HVA) levels were elevated to a variable degree by all compounds. Their potency in elevating striatal HVA ranked in the order: clebopride, metoclopramide, sulpride, tigan, and DP. The benzamides, in general, elevated both striatal and mesolimbic HVA to the same degree. The data suggests that such substituted benzamides produce a functional blockade of cerebral dopamine receptors and that substituted benzamides form a pharmacologically distinct group of dopamine antagonists, whose mechanism of action differs from that of classical neuroleptics. Also, there may be differences in the modes of action of various benzamides, to explain their varying clinical potencies. 42 references. (Author abstract modified)

000356 Engel, J.; Ahlenius, S. Department of Pharmacology, University of Goteborg, Fack S-400, 33 Goteborg 33, Sweden **Catecholamines and biochemically induced abnormal behaviour in rats.** Brain Research (Amsterdam). 127(2):374, 1977.

Studies elucidating the role of catecholamines in learning behavior of rats were reviewed in a paper presented at the 8th Annual Meeting of the European Brain and Behaviour Society in Copenhagen, August, 1976. In rats both l-DOPA and amphetamine can produce an inadequate behavior consisting of a total loss of discriminative behavior but not of avoidance behavior in a discriminative avoidance test. This biochemically

induced behavioral abnormality could be completely normalized by antipsychotic drugs that are known to block central dopamine receptors. The noradrenaline receptor blocking agent had no effect on this biochemically induced abnormal behavior, indicating an involvement of central dopamine mechanisms. Further support for this contention is given by the findings that the specific dopamine receptor agonist apomorphine produced the same abnormal behavior as both l-DOPA and amphetamine in the discriminative avoidance task. (Author abstract)

000357 Everitt, Barry J. Department of Anatomy, University of Cambridge, Cambridge, England **5-Hydroxytryptamine and sexual behaviour.** Brain Research (Amsterdam). 127(2):378-379, 1977.

Research data indicating an association between 5-hydroxytryptamine (5-HT) and sexual behavior were reviewed in a paper presented at the 8th Annual Meeting of the European Brain and Behaviour Society in Copenhagen, August, 1976. Data were presented which add considerable support for the role of 5-HT in the control of sexual receptivity by the use of new, more specific, psychoactive drugs. The 5-HT uptake blockers GEA 654 and H 102/09 and the 5-HT releasing agent PTR-17402 17402 totally inhibit the receptivity induced by estrogen and progesterone. More significant is the induction of receptivity by the highly specific 5-HT receptor blocker methergoline -- these effects are correlated with the actions of the drug on extensor reflex activity and 5-HT turnover. Recent interest in the finding that some hallucinogenic compounds stimulate presynaptic and postsynaptic 5-HT receptors at low and high dosage, respectively, has led to the hypothesis that such drugs should first induce and then inhibit sexual activity as their dose increases. Researches suggest the involvement of 5-HT in sexual receptivity, but none of them define the mechanisms of action of progesterone nor on which component(s) of the 5-HT containing neural systems it acts and which have been suggested to be, variously, the midbrain (in which are 5-HT cell bodies), hypothalamus or septum (both rich in 5-HT terminals). Data were also presented which suggest that 5-HT neurones projecting from midbrain raphe nuclei to the hypothalamus and/or septal nuclei are one possible target for progesterone. (Author abstract modified)

000358 File, Sandra E. Department of Pharmacology, School of Pharmacy, University of London, London WC1N 1AX, England **Raised brain GABA levels, motor activity and exploration in the rat.** Brain Research (Amsterdam). 131(1):180-183, 1977.

To investigate the effects of raised gamma-aminobutyric acid (GABA) levels on spontaneous motor activity and exploration of a novel environment, a series of behavioral studies was undertaken in rats following intracisternal injection of ethanolamine O-sulphate (EOS). It was found that while EOS raised GABA levels, this did not result in any changes in spontaneous activity or in mean levels of motor activity. Exploration of a novel environment was significantly reduced, although not accompanied by any impairment in between day habituation. The importance of conceptually distinguishing between motor activity and exploration behaviors is emphasized. 14 references.

000359 Fischman, Marian W.; Schuster, Charles R. Department of Psychiatry, University of Chicago, 950 E. 59th St., Chicago, IL 60637 **Long-term behavioral changes in the rhesus monkey after multiple daily injections of d-methylamphetamine.** Journal of Psychopharmacology and Experimental Therapeutics. 201(3):593-605, 1977.

The effects of multiple daily injections of d-methylamphetamine on spaced lever press responding were investigated in the rhesus monkey. Responding was measured after single injections of d-methylamphetamine both before and after the monkeys were maintained on a multiple daily injection regimen in doses ranging from 0.5to 16mg/kg/day. Tolerance developed to the suppressant effects of this drug on responding. As evidenced by a shift in the dose response curve measuring number of responses and number of reinforcements per session, this tolerance persisted for at least 3 months after cessation of the multiple drug injection regimen. For tolerance to develop, it was necessary for the animals to perform the task while maintained on drug. When saline was substituted for d-methylamphetamine, no evidence of a withdrawal syndrome was seen. 23 references. (Journal abstract)

000360 Flood, James F.; Jarvik, Murray E.; Bennett, Edward L.; Orme, Ann E.; Rosenzweig, Mark R. B330 Franz Hall, UCLA, Los Angeles, CA 90024 **The effect of stimulants, depressants, and protein synthesis inhibition on retention.** Behavioral Biology. 20(2):168-183, 1977.

The effects of stimulants, depressants, and protein synthesis inhibition on retention were studied in Swiss-Webster male albino mice, in which amnesia was caused by inhibition of cerebral protein synthesis with anisomycin. The level of arousal was modified by the use of excitant and depressant drugs. Posttraining administration of a stimulant (d-amphetamine, strychnine, or picrotoxin) counteracts the amnesic effects of protein synthesis inhibition, so that amnesia does not occur unless the duration of inhibition is lengthened. Stimulants show a time dependency, since they are less effective when administered at longer intervals after training. Depressants enhance the amnesia resulting from protein synthesis inhibition. Biochemical experiments showed that depressants alone had only slight effects on the rate of protein synthesis. In combination with anisomycin, the depressant did not markedly prolong the duration or increase the degree of inhibition. Stimulants, either by themselves or in combination with the inhibitors, had little or no effect on protein synthesis. The results are all consistent with the hypothesis that the level of arousal following acquisition plays an important role in determining the length of time over which the biosynthetic phase of memory formation will last. 47 references. (Journal abstract modified)

000361 Ford, R. D.; Balster, Robert L.; Dewey, W. L.; Beckner, J. S. Pharmacology Department, Michigan State University, East Lansing, MI 48823 **Delta9-THC and 11-OH-delta9-THC: behavioral effects and relationship to plasma and brain levels.** Life Sciences (Oxford). 20(12):1993-2003, 1977.

The time course of effects following i.p. injections of 0.3to 10.0mg/kg delta9-tetrahydrocannabinol (delta9-THC) and 0.1to 3.0mg/kg 11-OH-delta9THC were determined in rats during 6 hour sessions under a fixed-interval 90 sec schedule of food reinforcement. The acute and chronic effects of the two drugs were also tested in different rats trained on a differential reinforcement of low rate 15 sec schedule. Onset of activity of 11-OH-delta9-THC was faster and usually abruptly suppressed all responding, while delta9-THC had a slower onset and often resulted in a decreased and steady pattern of responding. The former compound was about 3 times more potent, had a shorter duration of effect, and returned to control rates within a shorter time when responding resumed. Tolerance and cross-tolerance developed at the same rate for both drugs. The time course for plasma and brain levels of radioactivity were stu-

died in other rats after i.p. administration of H3-delta9-THC and H3p11-OH-delta9-THC. The 11-OH delta9-THC was absorbed more quickly and reached peak plasma and brain levels earlier. Higher plasma and brain levels, as well as a larger brain to plasma ratio of radioactivity, were attained with this compound. Differences in behavioral effects produced by delta9-THC and its 11-hydroxy metabolite were accompanied by differences in absorption and disposition. 21 references. (Author abstract)

000362 Ford, Robert D.; Balster, Robert L. Pharmacology Department, Michigan State University, East Lansing, MI 48823 **Reinforcing properties of intravenous procaine in rhesus monkeys.** Pharmacology Biochemistry and Behavior. 6(3):289-296, 1977.

In a study of the reinforcing properties of intravenous procaine in rhesus monkeys, lever pressing behavior was maintained by a fixed-ratio 10 schedule of intravenous cocaine or codeine injections until substitution of saline or procaine hydrochloride for the cocaine or codeine. Each substitution was separated by 3 or more days of cocaine or codeine reinforced responding. At one or more doses, procaine substitution resulted in response rates higher than saline control in all 5 animals. High response rates (greater than 30 injections per session) were obtained in four of the five monkeys. In addition, procaine self-administration was studied in two naive monkeys given 23 hour per day access to procaine following an initial 10 days of saline contingent operant level responding. At a dose of 0.3mg/kg injection, both animals initiated responding for procaine reinforcement. Drug intake varied widely from day to day, however each animal took over 1200 injections per day (over 360mg/kg) at least once during the 30 days of access. With the exception of decreased food intake, there was little evidence for behavioral toxicity from these doses. Following a second 10 days of saline self-administration, both animals were given access to 3.0mg/kg/injection procaine. A substantially greater intake of procaine was observed which was associated with marked toxicity. 34 references. (Author abstract)

000363 Fowler, S. C.; Filewich, R. J.; Leberer, M. R. Department of Psychology, University of Mississippi, University, MS 38677 **Drug effects upon force and duration of response during fixed-ratio performance in rats.** Pharmacology Biochemistry and Behavior. 6(4):421-426, 1977.

The effects of d-amphetamine, chlordiazepoxide, chlorpromazine, and dantrolene upon force and duration of response during fixed-ratio (FR) performance in rats was investigated on a tandem schedule of water reinforcement by paw pressing a silent, isometric, force sensing manipulandum. Peak force, duration, and interresponse time (IRT) of individual responses were recorded and it was found that conjoint examination of these three dependent variables provided more information on drug effects than IRT measures alone. Low doses of amphetamine elevated peak force without affecting IRT, while high doses decreased peak force and lengthened IRT during FR component. Chlordiazepoxide increased peak force for all doses while dantrolene decreased it for all doses. Chlorpromazine did not affect peak force but did increase response duration. Higher doses of chlordiazepoxide, chlorpromazine, and dantrolene lengthened IRT during the FR component. The results suggest that methods used in this experiment may offer some assistance for separating psychoactive drugs according to distinctive behavioral effects and that it is not possible to assume that all dependent measures of operant behavior will provide parallel characterizations of a drug's effect. 20 references. (Author abstract modified)

000364 Franklin, K. B. J.; Herberg, L. J. Institute of Neurology, National Hospital, Queen Square, London WC1N 3BG, England **Noncontingent displacement of catecholamines by intraventricular tyramine: biphasic dose-response effects on self-stimulation.** Neuropharmacology (Oxford). 16(1):53-55, 1977.

The hypothesis that rewarding events are signaled in the brain by catecholamine dependent pathways was tested by examining the effect of tyramine on self-stimulation in adult male Wistar rats. Tyramine releases catecholamines from nerve endings in a continuous flow, while amphetamine releases neurotransmitter in discrete synchronized with ongoing nerve impulses. A cannula was implanted in the lateral ventricle and a stimulating electrode in the lateral hypothalamus. Rats were trained to operate a pedal for self-stimulation. They were allowed to self-stimulate for 30 min and then were injected intraventricularly with either saline, tyramine, or amphetamine and allowed to self-stimulate for another 40 min. Tyramine caused a dose dependent decrease in self-stimulation, while amphetamine caused a dose dependent increase in self-stimulation. A second dose of 1800nm tyramine 60 min later was much less effective than the first dose. Results suggest that self-stimulation may be impaired if catecholamine is released in a manner unrelated to the rat's lever pressing performance and are consistent with the hypothesis that catecholamine serves as a neurotransmitter in a central reinforcement system. 18 references.

000365 Franklin, K. B. J.; Herberg, L. J. Institute of Neurology, Queen Square, London WC1N 3BG, England **Amphetamine induces anorexia even after inhibition of noradrenaline synthesis.** Neuropharmacology (Oxford). 16(1):45-46, 1977.

The effect of the norepinephrine synthesis inhibitor and depleter, bis(4-methyl-1-homopiperazinylthiocarbonyl)sulfide (FLA-63), on anorexia induced by amphetamine was studied in hooded rats. Rats were given either FLA-63 dissolved in dilute acetic acid or acetic acid alone 2 hr before test feeding, and 15 min before test feeding, half the rats in each group were given methylamphetamine HCl and the others received isotonic saline. FLA reduced food intake by 27% while methylamphetamine reduced food intake by 31%. The two drugs together had an additive effect, reducing food intake by 62%. Amphetamine induced anorexia therefore depends on some process other than the release of norepinephrine. 16 references.

000366 Frankova, Slavka. Institute for Clinical and Experimental Medicine, Budejovicka 800, 14622 Prague 4, Czechoslovakia **Drug-induced changes in the maternal behavior of rats.** Psychopharmacology (Berlin). 53(1):83-87, 1977.

The effect of chlorpromazine and amphetamine (3mg/kg bodyweight injected subcutaneously) on the maternal behavior of rats was observed on days 4, 5, 6, 8, and 10 after the birth of the young. Spontaneous behavior in the presence of the young and contacts with them were recorded in four different testing situations. Both drugs interfered with the maternal behavior of female rats and reduced the duration of contacts with the young. The level of behavioral manifestations was dependent on the type of experimental procedure. 22 references. (Author abstract)

000367 Glick, S. D.; Jerussi, T. P.; Cox, R. D.; Fleisher, L. N. Dept. of Pharmacology, Mount Sinai School of Medicine, CUNY, 5th Ave. & 100th St., New York, NY 10029 **Pre- and post-synaptic actions of apomorphine: differentiation by rotary effects in normal rats.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 225(2):303-307, 1977.

The presynaptic and postsynaptic effects of d-amphetamine and apomorphine on normal rat behavior were compared. Normal rats were tested for rotation (circling behavior) following d-amphetamine (1.0mg/kg) and, a week later, following apomorphine (10.0mg/kg). In most rats, d-amphetamine and apomorphine elicited rotation in opposite directions whereas, in some rats, the two drugs elicited rotation in the same direction. Subsequently, alpha-methyl-para-tyrosine was found to antagonize the rotatory effect of apomorphine in the latter but not in the former rats. The results suggest that apomorphine has both presynaptic and postsynaptic actions and that relative sensitivity to these actions varies among rats. 20 references. (Author abstract modified)

000368 Glick, S. D.; Strumpf, A. J.; Zimmerberg, B. Department of Pharmacology, Mount Sinai School of Medicine, CUNY, New York, NY 10029 **Effect of in utero administration of morphine on the subsequent development of self-administration behavior.** Brain Research (Amsterdam). 132(1):194-196, 1977.

To determine the effect of morphine administration during gestation and lactation on subsequent development of self-administration behavior, learned self-administration behavior of rats exposed to morphine in utero and during lactation was compared with that of control and naive animals was compared. The in utero drugged group made significantly more responses than either of the other two groups during the first week: asymptotic intake of morphine was similar in all groups, with the in utero drugged group reaching asymptote sooner. It is concluded that although morphine sensitivity was unaltered, in utero exposure facilitated the rate at which self-administration behavior was learned. 4 references.

000369 Goudie, A. J. Department of Psychology, University of Liverpool, P.O. Box 147, Liverpool L69 3BX, England **Discriminative stimulus properties of fenfluramine in an operant task: an analysis of its cue function.** Psychopharmacology (Berlin). 53(1):97-102, 1977.

Fenfluramine at a dose of 3.0mg/kg was found to possess discriminative stimulus properties controlling lever selection by rats in a two lever operant task. Subjects trained to discriminate the fenfluramine cue failed to generalize to amphetamine in extinction tests at doses between 0.25 and 1.0mg/kg. Subjects did, however, generalize to the fenfluramine metabolite, norfenfluramine, at a dose of 2.0mg/kg. It is suggested these data provide further evidence for a pharmacological difference between fenfluramine and amphetamine, and support the hypothesis that norfenfluramine is an active metabolite of fenfluramine. The relevance of these findings to theoretical and methodological aspects of drug discrimination studies is considered. 25 references. (Author abstract)

000370 Greizerstein, Hebe B. Research Institute on Alcoholism, 1021 Main Street, Buffalo, NY 14203 **Tolerance to ethanol: effect of congeners present in bourbon.** Psychopharmacology (Berlin). 53(2):201-203, 1977.

To determine whether ethanol congeners present in bourbon affect the acquisition of tolerance to ethanol in goldfish, fish were exposed to water and to ethanol or bourbon solutions of the same ethanol concentration during 6 hr and then tested in ethanol for loss of righting reflex or overturn point. The content of ethanol in the brain at overturn was determined for each fish. Although the ethanol brain levels at overturn of bourbon exposed fish were higher than those of the ethanol group, no significant differences were observed between the two groups. Moreover, there was a tendency for the bourbon fish to take longer times to overturn than the ethanol fish. These findings indicate that the congeners present in bourbon did not affect significantly the development of tolerance to ethanol in goldfish. 8 references. (Author abstract modified)

000371 Grevert, Priscilla; Goldstein, Avram. Addiction Research Foundation, Palo Alto, CA 94304 **Some effects of naloxone on behavior in the mouse.** Psychopharmacology (Berlin). 53(2):111-113, 1977.

The effect of naloxone on the latency of mice to enter a dark box and on hot plate behavior was determined. Mice took significantly longer to enter a dark box after receiving 10mg/kg of naloxone than did the saline controls. With the hot plate technique, at all doses except the lowest (0.03mg/kg), naloxone treated mice jumped from the hot plate significantly sooner than did the saline controls. The hot plate results suggest that prolonged expoosure to noxious stimulus may be necessary to activate the endorphin system. It is concluded that endogenous opiods may not be involved in an animal's awareness of noxious stimuli. 13 references. (Journal abstract modified)

000372 Groves, Philip M. Department of Psychology, University of Colorado, Boulder, CO 80309 **Possible mechanisms involved in the stereotyped behavior elicited by amphetamine.** Biological Psychiatry. 12(3):381-387, 1977.

Factors possibly contributing to ampetamine induced stereotyped behavior in animals are discussed, noting that evidence suggests that induction of stereotyped behavior is partly due to alterations in catecholaminergic transmission in the central nervous system. There is evidence that amphetamine may produce inhibition of neuronal activity in the neostriatum and pars compacta of the substantia nigra by means of dopamine released from dopaminergic terminals in the neostriatum and dopaminergic dendrites in the substantia nigra. Evidence also suggests that the possibility of a gamma-aminobutyric acid mediated functional antagonism between excitatory cortical and/or thalamic input to the neostriatum and dopaminergic input from the substantia nigra which could be involved in the apparently mutually exclusive occurrence of amphetamine induced locomotion and stereotyped behavior. Such evidence may have relevance to a variety of behavioral disorders involving the basal ganglia and catecholaminergic transmission in the central nervous system. 20 references. (Author abstract modified)

000373 Grupp, Larry A. Dept. of Pharmacology, University of Toronto, Toronto, Ontario M5S 1A8, Canada **Effects of pimozide on the acquisition, maintenance, and extinction of an amphetamine-induced taste aversion.** Psychopharmacology (Berlin). 53(3):235-242, 1977.

The role of dopaminergic transmission in the acquisition, maintenance, and extinction of a taste aversion produced by d-amphetamine sulphate is studied in rats pretreated with the dopamine receptor blocker, pimozide. In the first phase of the experiment, all doses of pimozide attenuated but did not block the acquisition of the aversion produced by 1.0mg/kg but not by 2.0mg/kg amphetamine. In phase II, pimozide pretreatment was suspended to allow the attenuated groups to acquire the aversion and then reintroduced in phase III. In this phase all groups continued to avoid the taste, indicating a failure of pimozide to affect the maintenance of the avoidance response. When amphetamine treatment was suspended in phase IV, pimozide accelerated the extinction, especially in those groups that had previously received the 1.0mg/kg dose of amphetamine. These results are discussed with reference to

dopaminergic mechanisms in avoidance learning and a pimozide mediated reduction in the functional strength of amphetamine as an unconditioned stimulus. 17 references. (Author abstract modified)

000374 Hall, Michael E. Department of Physiology and Biophysics, University of Miami School of Medicine, P.O. Box 520875, Biscayne Annex, Miami, FL 33152 **Enhancement of learning by cycloheximide and DDC: a function of response strength.** Behavioral Biology. 21(1):41-51, 1977.

Treatment with either cycloheximide or diethyldithiocarbamate (DDC) 30 min before training on a passive avoidance task altered learning in mice tested 24 hr after training. The observed alterations were dependent on the intensity of the footshock used during training. Retention of the avoidance response was impaired by diethyldithiocarbamate when a footshock of 1.6mA was employed, while retention by drug treated mice was enhanced by both drugs when a footshock of 0.10mA was used. The effects of pretreatment with cycloheximide and diethyldithiocarbamate on the acquisition of a light/dark discriminated escape task in a T-maze were also examined. Drug and saline treated mice were given either 0, 5, 10, or 15 training trials and then were tested 24 hr later by training to a fixed criterion. Mice given either drug prior to five training trials took significantly fewer trials to reach criterion than saline controls. Mice given cycloheximide prior to 10 training trials took significantly more trials to reach criterion than saline controls. There were no differences in retention between drug and saline mice given either 0 or 15 trials. The results of these experiments suggest that the strength of a learned response is an important variable in determining the effects of cycloheximide and diethyldithiocarbamate on learning. When response strength is minimal, these drugs act to enhance, rather than impair, the processes of learning. 51 references. (Author abstract)

000375 Haranath, P. S. R. K.; Indira, G.; Krishnamurthy, A. Department of Pharmacology, Kurnool Medical College, Kurnool A. P. 518 002, India **Effects of cholinomimetic drugs and their antagonists injected into vertebral artery of unanaesthetized dogs.** Pharmacology Biochemistry and Behavior. 6(3):259-263, 1977.

Cholinomimetic drugs and their antagonists were injected into the vertebral artery of unanaesthetized dogs, to see if the effects were similar to those obtained by intracarotid injection of the same compounds. Acetylcholine pilocarpine, nicotine, eserine and neostigmine produced sleep apart from a few other peripheral effects. Sleep for longer periods followed injections of tubocurarine, atropine and hexamethonium. Adrenaline and noradrenaline did not produce significant effects on behavior and sleep. 5-Hydroxytryptamine also caused sleep. 19 references. (Author abstract)

000376 Hatchell, Patricia C.; Collins, Allan C. Institute for Behavioral Genetics, University of Colorado, Boulder, CO 80309 **Influences of genotype and sex on behavioral tolerance to nicotine in mice.** Pharmacology Biochemistry and Behavior. 6(1):25-30, 1977.

Influence on genotype and sex on behavioral tolerance to nicotine in mice was studied using spontaneous motor activity changes in Y-maze. Both genotype and sex influenced the development of tolerance to nicotine's effects on spontaneous motor activity, with DBA males requiring the longest exposure to nicotine and C57 males requiring the shortest drug exposure for tolerance development. DBA and C57 females developed behavioral tolerance equally after two days of pretreatment, but the C57 females showed a greater degree of tolerance after seven days of injections than did the DBA females. The development of behavioral tolerance in DBA males after four days of nicotine pretreatment was associated with the development of drug dispositional tolerance, with minimal evidence for a change in nervous system sensitivity. Drug dispositional tolerance in DBA females, C57 males and C57 females, however, did not seem to affect spontaneous motor activity. 27 references. (Journal abstract modified)

000377 Haycock, John W.; van Buskirk, Roderick; McGaugh, James L. Department of Psychobiology, University of California, Riverside, CA 92502 **Effects of catecholaminergic drugs upon memory storage processes in mice.** Behavioral Biology. 20(3):281-310, 1977.

To determine the effects of catecholaminergic drugs on memory storage processes, a series of experiments examining the effects of a variety of agents on retention performance by Ha/ICR mice in an inhibitory avoidance task was undertaken. When administered shortly before training, most of the drugs impaired subsequent retention performance. However, of the drugs studied, only diethyldithiocarbamate (DDC) produced retention deficits when administered posttraining. A series of experiments examined in detail the effects of DDC upon: 1) retention performance of inhibitory avoidance learning; 2) whole brain norepinephrine and dopamine levels; 3) brain seizure activity recorded from cortical electrodes, and 4) Timm's staining in the hippocampal mossy fiber system. DDC influenced all measures, and the degree of effect varied directly with dose. But, the amnestic effect of DDC did not depend in any simple manner upon reduction of brain catecholamine levels or upon induction of brain seizure activity. 67 references. (Author abstract modified)

000378 Heffner, Thomas G.; Zigmond, Michael J.; Stricker, Edward M. Department of Pharmacological and Physiological Sciences, University of Chicago, Abbott Hall, 947 E. 58th St., Chicago, IL 60637 **Effects of dopaminergic agonists and antagonists on feeding in intact and 6-hydroxydopamine-treated rats.** Journal of Pharmacology and Experimental Therapeutics. 201(2):386-399, 1977.

The effects on food intake of treatments which alter central dopaminergic function were examined in rats. Doses of d-amphetamine that increased the conversion of 3H-tyrosine to 3H-dopamine in the brain were found to decrease food intake, an effect that was reduced by the systematic administration of the dopaminergic antagonists alpha-methyltyrosine, haloperidol or spiroperidol. The dopaminergic agonists, apomorphine, dopa, cocaine and methylphenidate, also reduced feeding and these effects were attenuated by low doses of spiroperidol. In larger doses, spiroperidol itself decreased feeding, and this effect was potentiated by alpha-methyltyrosine. The ability of dopaminergic agonists and antagonists to inhibit food intake was also observed in rats treated with 6-hydroxydopamine so as to produce a selective 83% depletion of dopamine. In these animals, d-amphetamine was found to be less effective as an anorexic agent, whereas dopa, apomorphine, alpha-methyltyrosine and spiroperidol each was more effective in reducing food intake. These alterations in sensitivity may reflect neurochemical changes which occur at residual dopaminergic synapses after subtotal lesions of dopaminergic neurons. Both increases and decreases in central dopaminergic activity can reduce feeding and some intermediate rate of dopamine release provides an optimal level of neuronal activity for feeding by the hungry animal. 68 references. (Author abstract)

000379 Hill, R. C.; Roemer, D.; Buescher, H. Biological and Medical Research Division, Sandoz Ltd., CH-4002 Basel, Switzerland **Investigations of the analgesic and morphine-like properties of azidomorphine.** Journal of Pharmacology and Experimental Therapeutics. 201(3):580-586, 1977.

The analgesic properties and the tolerance and dependence producing liabilities of azidomorphine are tested in experiments with laboratory animals and are compared with the analgesic, tolerance and dependence producing properties of morphine. In analgesic studies, azidomorphine was much more potent than morphine by every route of administration, but particularly after parenteral administration. In the rheses monkey, the programmed administration of azidomorphine over a 9 week period produced physical dependence. Opiate like physical dependence to azidomorphine was also displayed by rhesus monkeys in 3 week self-administration trials. It was concluded that the introduction of the azido group into the morphine molecule leads to a marked increase in analgesic activity compared with the parent drug, but does not decrease the ability to produce physical dependence. 19 references. (Journal abstract modified)

000380 Hole, K. Institute of Physiology, University of Bergen, Bergen, Norway **The role of ascending and descending 5-hydroxytryptamine neurones in central control of pain sensitivity.** Brain Research (Amsterdam). 127(2):381-382, 1977.

The role of ascending and descending 5-hydroxytryptamine (5-HT) neurones in the central control of pain sensitivity in the rat was discussed in a paper presented at the 8th Annual Meeting of the European Brain and Behaviour Society in Copenhagen, August, 1976. Electrolytic lesions of the dorsal and the median midbrain raphe nuclei resulted in a 70% reduction in forebrain 5-HT concentration, but did not significantly change pain sensitivity as measured by flinch/jump thresholds. 5,7-Dihydroxytryptamine (5,7-DHT) injected stereotactically into the ascending 5-HT pathways in mesencephalon resulted in a selective lesion of the ascending 5-HT neurones (demonstrated by fluorescence histochemistry), and in vitro uptake of (3H)5-HT was reduced by 88% in the hypothalamus and by 66% in the cortex cerebri. (3H)NA uptake was not significantly changed. Pain sensitivity as measured with the hot plate test was not increased, even when the lesioned rats were treated with the tryptophan hydroxylase inhibitor alpha-propyldopacetamide. Morphine analgesia also was unchanged. Tryptophan resulted in an increase in forebrain 5-HT concentrations (to 175% of control) and an increase in 5-HT turnover. Flinch/jump thresholds, however, were not changed. 5-HT agonists and antagonists did not change pain sensitivity as measured by the tail immersion technique and the flinch/jump thresholds. 5,6-DHT lesions of descending 5-HT neurones reduced the in vitro (14C)5-HT uptake in the spinal cord by 73%, but pain sensitivity was not significantly changed. It is concluded that the increased pain sensitivity observed in rats with electrolytic lesions in the medial forebrain bundle seems not to be due to a lesion of the ascending 5-HT neurones only. (Author abstract modified)

000381 Holtzman, Stephen G.; Shannon, Harlan E.; Schaefer, Gerald J. Dept. of Pharmacology, Emory University, Atlanta, GA **Discriminative effects of narcotic agonists and antagonists in the rat and squirrel monkey.** Psychopharmacology Bulletin. 13(1):37-38, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, a study in which the discriminative effects of morphine and other morphinelike analgesic drugs were examined in rats and the discriminative effects of cyclazocine and cyclazocinelike drugs were examined in squirrel monkeys to assess the validity of an animal model for studying the effects of narcotic agonists and narcotic antagonists is reported. The studies in rats revealed that: 1) all 13 narcotic analgesics tested substituted for the training dose of morphine in a dose related manner; 2) the discriminative effects were stereospecific (levorphanol substituted for morphine but dextrorphan did not); 3) the discriminative effects of morphine were blocked by naloxone; 4) tolerance to the discriminative effects of morphine and cross-tolerance to methadone occurred; 5) drugs with prominent morphinelike activity (butorphanol, nalmexone, pentazocine, profadol) substituted for morphine but the dysphorigenic agents cyclazocine, ketocyclazocine, levallorphan, nalorphine, nalbuphine, and oxilorphan did not; and 6) nonopoid psychoactive drugs, including dextroamphetamine, chlorpromazine, ketamine, mescaline, pentobarbital, physostigmine, and scopolamine did not substitute for the training dose of morphine. The studies in squirrel monkeys revealed that: 1) the discriminative effects of cyclazocine were blocked by naloxone; 2) the cyclazocinelike agonists ketocyclazocine, levallorphan and oxilorphan produced a dose related substitution for the training dose of cyclazocine; 3) the analgesics with little or no cyclazocinelike activity (morphine, nalbuphine, and pentazocine) did not substitute for cyclazocine; and 4) the nonopoid psychoactive drugs failed to substitute for cyclazocine. It is concluded that the drugs consistently produce patterns of discriminative effects in the two species that closely parallel their respective patterns of subjective effects in man. It is suggested that drug discrimination procedures in animals may provide models for studying the component actions of narcotic agonists and narcotic antagonists. 3 references.

000382 Ionescu, Elisabeth; Buresova, Olga. Central Institute of Biology, Bucharest, Rumania **Failure to elicit conditioned taste aversion by severe poisoning.** Pharmacology Biochemistry and Behavior. 6(3):251-254, 1977.

In an attempt to assess the universal validity of the conditioned taste aversion (CTA) paradigm, various types of poisoning (UC) were associated with the gustatory CS. Water deprived rats were habituated for two days to the drinking box, where water was available for 15 min. On Day 3, access to the CS (saccharin) was followed after 30 min by a sublethal dose of poison. After 4 days of recovery, water deprivation schedule was resumed on Days 8 and 9. During the retention test on Day 10 saccharin consumption dropped by 60% in the lithium chloride (LiCl) poisoned rats, but no CTA developed in animals poisoned by pyrrolopyrimidine, gallamine, malonate and cyanide. CTA of intermediate intensity was evoked by iodoacetate and fluoride. The absence of CTA was not due to the amnesic effect of poisoning, since LiCl administration to NaCN poisoned rats produced CTA of usual intensity. It is concluded that CTA is not related to the overall severity of poisoning but rather to the effect of the poison on specific interoceptors. 26 references. (Author abstract)

000383 Isaacson, Robert L.; Fish, Barbara S.; Lanier, Linda Patia; Dunn, Adrian J. Department of Psychology, University of Florida, Gainesville, FL 32611 **Serotonin reduction early in life and its effects on behavior.** Life Sciences (Oxford). 21(2):213-221, 1977.

The long-term behavioral, pharmacological, and neurochemical effects of serotonin reduction early in life were examined in 37 rats. Rats given 5,6-dihydroxytryptamine (5,6-DHT) 5

days after birth to deplete serotonin were tested subsequently for alterations in locomotor activity and responses to d1-amphetamine and scopolamine. Later in life subjects were given amphetamine while performing an operant schedule for food reward. Biochemical analyses revealed that the 5,6-DHT treatment produced reductions in forebrain serotonin content. No alteration in locomotor activity or in responsiveness to amphetamine in the open field was observed. However, animals given the highest dose neonatally showed open-field activity increases at high doses of scopolamine significantly more frequently than the other groups of animals. Although treatment with 5,6-DHT did not affect response rates on the operant task under no drug conditions, the rate suppressive effects of amphetamine on the task were greatly enhanced in the treated animals. 35 references. (Author abstract modified)

000384 Iuvone, P. Michael; Boast, Carl A.; Gray, Harry E.; Dunn, Adrian, J. Laboratory for Preclinical Pharmacology, NIMH, St. Elizabeths Hospital, Washington, DC 20032 **Pentylenetetrazol: inhibitory avoidance behavior, brain seizure activity, and (3H)lysine incorporation into brain proteins of different mouse strains.** Behavioral Biology. 21(2):236-250, 1977.

Effects of pentylenetetrazol (PTZ,Metrazol) on step through inhibitory avoidance behavior, brain seizure activity, and (3H)lysine incorporation into brain proteins were examined in Swiss/ICR and C57B1/6J mice. Immediate posttraining administration of PTZ resulted in significant retention deficits in both strains of mice. In Swiss/ICR mice, subconvulsive doses of PTZ were sufficient to produce amnesia. Electrographic recordings from the cerebral cortex and hippocampus indicated that behavorial convulsions always accompanied sustained high voltage spiking activity in the hippocampus and cortex. Both convulsive and nonconvulsive doses of PTZ inhibited the incorporation of (3H)lysine into brain proteins during the first 10 min after training and PTZ administration. PTZ both produced amnesia and inhibited the incorporation of (3H)lysine into brain proteins in the absence of gross electrographic abnormalities. Neither of these effects was related to the presence or absence of convulsions. In C57B1/6J mice administered a convulsive dose of PTZ, the inhibition of (3H)lysine incorporation showed the following regional distribution: cortex is greater than diencephalon. Striatum which is greater than hippocampus which is equal to or approximates brainstem. Thus, PTZ both produced amnesia and inhibited the incorporation of (3H)lysine into brain proteins in the absence of gross electrographic abnormalities, but neither of these effects were related to the presence or absence of convulsions. 23 references. (Author abstract modified)

000385 Iwamoto, Edgar T.; Way, E. Leong. Dept. of Pharmacology, School of Medicine, Univ. of California, San Francisco, CA 94143 **Circling behavior and stereotypy induced by intranigral opiate microinjections.** Journal of Pharmacology and Experimental Therapeutics. 203(2):347-359, 1977.

To assess behavioral effects of intranigral opiate microinjections, morphine, beta-endorphin, l-methadone, levorphanol, l-pentazocine, and nalorphine were injected unilaterally into the substantia nigra of rats. Results indicate continuous circling behavior contralateral to the injection. Morphine induced dose-dependent contralateral circling 15 minutes after the injection. Parenteral administration of 4 or 20mg/kg s.c. naloxone blocked the contralateral circling behavior induced by intranigrally injected narcotic agonists and partial agonists. Dextrorphan was 1/20 as potent as levorphanol in inducing contralateral circling behavior and its effect was not reversed by naloxone. In contrast to unilateral administration, bilateral intranigral injection of either morphine or beta-endorphin resulted in profound stereotyped behavior characterized by continuous sniffing, biting, and gnawing which ceased abruptly after s.c. naloxone administration. It is proposed that compounds with opiate activity may enhance nigroneostriatal impulse transmission to induce contralateral circling behavior when injected unilaterally and stereotyped behavior when injected bilaterally into the substantia nigra of rats. 66 references. (Author abstract modified)

000386 Johanson, Chris-Ellyn; Schuster, Charles R. University of Chicago, Chicago, IL 60637 **The effects of pharmacological and environmental variables on drug choice in rhesus monkeys.** Psychopharmacology Bulletin. 13(1):39-40, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, a study in which rhesus monkeys equipped with an intravenous double lumen catheter were trained to lever press to deliver an injection of one of two possible substances to investigate the reinforcing effects of psychomotor stimulant drugs from their other effects is reported. Various doses of cocaine, methylphenidate, or diethylpropion were compared to saline. Animals chose the drug rather than saline in over 75% of the trials. Using the same system high doses of drugs were compared to low doses in choice tests. In almost all cases, animals chose the higher dose. It is concluded that high doses are more reinforcing than low doses. In additional trials, high doses were chosen regardless of drugs presented. It is suggested that these experiments demonstrate the possible usefulness of the choice procedure in predicting the abuse liability of drugs. 3 references.

000387 Jones, B. E.; Prada, J. A. National Institute on Drug Abuse, Division of Research, Addiction Research Center, Lexington, KY 40511 **Effects of methadone and morphine maintenance on drug-seeking behavior in the dog.** Psychopharmacology (Berlin). 54(2):109-112, 1977.

The effects of methadone and morphine maintenance were investigated under the condition of concurrent availability of morphine by self-administration to study drug seeking behavior in the dog. Methadone was given passively for 2 weeks by continuous i.v. infusion, and the amount of methadone administered daily was the same in mg/kg as the mean daily morphine dosage self-administered during the premaintenance control week. Morphine self-administration was markedly reduced initially but returned to normal levels within 2 weeks of methadone administration. Following the maintenance period, morphine self-administration was increased over the premaintenance period for 2 weeks. A similar result was obtained when morphine was used as the maintenance drug in an amount that was three times that which had been self-administered during the premaintenance week. 15 references. (Author abstract modified)

000388 Joseph, James A.; Appel, James B. Gerontology Research Center, National Institute on Aging, Baltimore City Hospitals, Baltimore, MD 21224 **Behavioral sensitivity to LSD: dependency upon the pattern of central 5HT depletion.** Pharmacology Biochemistry and Behavior. 6(5):499-504, 1977.

Two experiments were carried out with rats using a fixed-ratio schedule of water reinforcement to determine the efficacy of two serotonin (5-hydroxytryptamine, 5-HT) depleting agents in altering sensitivity to a low dose of lysergic acid diethylamide (LSD). Although both para-chloroamphetamine (PCA) and 5,7-dihydroxytryptamine (5,7-DHT) reduced whole

brain 5-HT, only 5,7-DHT altered LSD sensitivity so that a low dose of LSD given 12 days after 5,7-DHT disrupted bar press behavior. Some of the animals that did not show increased sensitivity to LSD after receiving PCA did show behavioral disruption to LSD after pretreatment with parachlorophenylalanine. The results are discussed in terms of a possible particular pattern of 5-HT depletion that must be achieved before sensitivity to LSD is produced. 27 references. (Author abstract modified)

000389 Kandel, David A.; Schuster, Charles R. Department of Psychiatry, University of Chicago, Pritzker School of Medicine, 950 East 59th Street, Chicago, IL 60637 **An investigation of nalorphine and perphenazine as negative reinforcers in an escape paradigm.** Pharmacology Biochemistry and Behavior. 6(1):61-71, 1977.

An investigation of nalorphine and perphenazine as negative reinforcers in an escape paradigm carried out with rhesus monkeys was made. Rhesus monkeys were trained to self-administer morphine intravenously at dose levels sufficient to develop physical dependence. The monkeys were then trained to press a lever to escape a continuous infusion of the morphine antagonist, nalorphine. When saline was substituted for the nalorphine, escape responding extinguished. After morphine self-administration was eliminated, responding to escape from nalorphine was maintained in the postdependent monkeys, showing no difference from escape responding during morphine dependence. Finally, perphenazine was substituted for the nalorphine and the monkeys reliably escaped continuous infusions of this phenothiazine. The escape procedure appears useful for analyzing the aversive properties of drugs. 27 references. (Journal abstract modified)

000390 Keehn, J. D.; Riusech, Rosa. Atkinson College, York Univ., Downsview, Ontario M3J 2R7, Canada **Schedule-induced water and saccharin polydipsia under haloperidol.** Bulletin of the Psychonomic Society. 9(6):413-415, 1977.

The effects of haloperidol on water and saccharin polydipsia in the rat were compared to determine whether haloperidol could depress through sedation the schedule induced drinking after eating that requires movement between food cup and water spout. Two white rats exhibited water and .4% saccharin polydipsia under a fixed time 1 minute feeding schedule. Oral administration of haloperidol in doses of .25, .50, and .75mg reduced consumption of both fluids in direct proportion to dose, but saccharin intakes always exceeded those of water. Based on these findings, it is posited that suppression of water polydipsia by haloperidol is not merely the result of sedation. Rather, polydipsia occurs because food plus fluid is a greater reinforcer than food alone, and that excessive drinking is a side-effect of a normal reinforcement process that overpowers homeostatic mechanisms. It is concluded that haloperidol redresses this imbalance. 11 references. (Author abstract modified)

000391 Kelleher, R. T.; Goldberg, S. R. New England Regional Primate Research Center, Havard Med. School, 1 Pine Hill Dr., Southborough, MA 07772 **Fixed-interval responding under second-order schedules of food presentation or cocaine injection.** Journal of the Experimental Analysis of Behavior. 28(3):221-231, 1977.

Fixed interval responding under second order schedules of food presentation or cocaine injection was examined in a study in which five squirrel monkeys operated a key under second order schedules in which every tenth completion of a 5 minute fixed interval resulted in either presentation of food or intravenous injection of cocaine. When a 2 second light was presented at the completion of the component fixed-interval schedules, positively accelerated responding developed and was maintained in each component. Over a tenfold range of doses of cocaine and amounts of food the second order schedule of cocaine injection maintained higher average rates of responding than the second order schedule of food presentation. Substituting saline for cocaine or eliminating food presentations decreased average rates of responding. When no stimulus change occurred at the completion of the first nine component fixed-interval schedules, but the 2 second light and food presentation or cocaine injection still occurred after the tenth component, only low and relatively constant rates of responding were maintained in each component. Patterns of responding characteristic of 5 minute fixed-interval schedules were maintained by the 2 second light paired with either cocaine injection or food presentation, though the maximum frequency of cocaine injection or food presentation was less than once per 50 minutes. 34 references. (Author abstract modified)

000392 Klawans, Harold L.; Goetz, Christopher; Nausieda, Paul A.; Weiner, William J. Dept. of Neurological Sciences, Rush-Presbyterian-St. Luke's Medical Center, 1753 W. Congress Pkwy. Chicago, IL 60612 **Levodopa-induced dopamine receptor hypersensitivity.** Annals of Neurology. 2(2):125-129, 1977.

To determine the effects of chronic levodopa exposure on d-amphetamine and apomorphine induced sterotyped behavior, male guinea-pigs were injected with either apomorphine or d-ampetamine following 14 days administration of oral levodopa, and behavior was assessed. Chronic administration of levodopa with a dopa decarboxylase inhibitor resulted in increased behavioral response to levodopa itself as well as to d-amphetamine and apomorphine. The chronic levodopa pretreatment resulted in a decreased threshold for stereotyped behavior for all three types of dopamine agonists. Results suggest that chronic agonism with levodopa can produce postsynaptic dopaminergic hypersensitivity within the striatum. These experiments act as a model of levodopa induced dyskinesia in patients receiving long-term levodopa therapy. The results reported here suggest that receptor site hypersensitivity may play a role in levodopa movement disorder. 18 references. (Author abstract modified)

000393 Koob, G. F.; Winger, G. D.; Meyerhoff, J. L.; Annau, Z. Johns Hopkins Univ., School of Hygiene and Public Health, Baltimore, MD 21205 **Effects of d-amphetamine on concurrent self-stimulation of forebrain and brain stem loci.** Brain Research (Amsterdam). 137(1):109-126, 1977.

To determine the effects of d-amphetamine on concurrent self-stimulation of forebrain and brainstem loci, two groups of rats with three chronic electrodes were allowed continuous access to self-stimulation on all three electrodes in a three level chamber. The rats in Experiment 1 had electrodes aimed at the septal area, anterior lateral hypothalamus and posterior lateral hypothalamus (PLH). After establishing regular baseline rates of lever pressing on all 3 electrodes, the rats were subjected to a series of d-amphetamine sulfate injections. Amphetamine increased response rates predominantly on the PLH electrode in all rats. As the dose of amphetamine increased, the rats self-stimulated at higher rates and for longer duration on the PLH electrode. In Experiment 2 the rats had electrodes aimed at the PLH, ventromedial tegmentum (VMT) and locus coeruleus (LC). After establishing baseline rates of lever pressing on all 3 electrodes, the rats were subjected to two identical series of

amphetamine sulfate injections. Amphetamine increased response rates predominantly on the PLH and VMT electrodes at 1.0mg/kg and on the VMT electrode at the 2.0and 4.0mg/kg doses. As the dose increased, the rats self-stimulated at higher rates and for longer duration on the VMT electrode. The LC electrode was the least active site for lever pressing after the 1.0, 2.0and 4.0mg/kg doses. Results suggest a differential anatomical sensitivity to amphetamine as measured by selective increases in responding and support the hypothesis that the mesolimbic dopamine pathway has a role in the facilitative effects of amphetamine on self-stimulation. 36 references. (Author abstract modified)

000394 Kostowski, Wojciech; Czlonkowski, Andrzej; Rewerski, Wojciech; Piechocki, Tadeusz. Dept. of Experimental Pharmacology, Medical Academy of Warsaw, 00-927 Warsaw, Poland **Morphine action in grouped and isolated rats and mice.** Psychopharmacology (Berlin). 53(2):191-193, 1977.

A study to determine the analgesic effects of morphine in grouped and isolated rats and mice is reported. Isolated animals developed altered behavioral patterns, including mousekilling in rats and mutual aggressiveness in mice. The analgesic effect of morphine was tested by tail compression in rats and by the hot plate for mice. Isolated rats developing mousekilling behavior had a raised pain threshold, while indifferent animals (nonkillers) responded less to morphine. Isolated mice, particularly low aggressors, gave enhanced responses to morphine. It was concluded that the behavioral effects of morphine on rats and mice is dependent on the genetic strain of animals used and on the period of imposed isolation prior to analgesia testing. 19 references. (Author abstract modified)

000395 Ksir, Charles; Nelson, Sidney. Department of Psychology, University of Wyoming, Laramie, WY 82071 **LSD and d-amphetamine effects on fixed interval responding in the rat.** Pharmacology Biochemistry and Behavior. 6(3):269-272, 1977.

In a study of the effects of LSD and d-amphetamine on fixed-interval (FI) responding in the rat, food deprived animals were trained on a daily regimen of 10 reinforcements on a FI 3min schedule. Graded doses of LSD and a d-amphetamine were given 30 min before sessions. LSD produced a decrease in response rate at doses of 0.32mg/kg and above, but did not disrupt the typical FI pattern of responding except at the highest dose (1.28mg/kg). Amphetamine did not significantly alter the overall response rate, but caused a dose related disruption of the FI response pattern, with previously low response rates increased more than higher rates, and occasional decreases in the previously highest rates. The experiment was repeated using the same rats responding on a multiple FIFR schedule. The presence of a 2000Hz tone signalled FR periods; the tone was absent during FI periods. During the FR components, a pellet was produced after 30 responses had been emitted. The FI components were unchanged. LSD again produced decreases in FI rate without altering the pattern, and amphetamine again altered the FI pattern without significantly changing overall rate. 8 references. (Author abstract)

000396 Kutscher, Charles L.; Wright, William A.; Lisch, Mark. Department of Psychology, Syracuse University, Syracuse, NY 13210 **NaCl and LiCl efficacy in the induction of aversion for quinine and saccharin solutions immediately following injection.** Pharmacology Biochemistry and Behavior. 6(5):567-569, 1977.

The efficacy of sodium chloride and lithium chloride in inducing an aversion for a palatable (saccharin) solution and an unpalatable (quinine hydrochloride) solution was compared in rats. The animals were injected intraperitoneally with a fixed amount of solutions containing various concentrations of lithium chloride or sodium chloride after 24 hr of water deprivation. Intake of quinine hydrochloride solution decreased with increasing concentrations of both sodium chloride and lithium chloride. On a molar basis, lithium chloride was substantially more effective. Lithium chloride also produced an aversion to the saccharin solution; however, sodium chloride produced no aversion to the saccharin solution over the dosage range which can be tolerated by the animals. The results suggest that an as yet unspecified change in the organism, perhaps gastrointestinal distress, causes the animal to reject either an unpalatable or a palatable solution after injection of lithium chloride. 14 references. (Author abstract modified)

000397 Lassen, J. Buus. Department of Pharmacology, A/S Ferrosan, Sydmarken 1-5, DK-2860 Soeborg, Denmark **Evidence for noradrenergic mechanism in the grooming produced by (+)-amphetamine and 4,gamma-dimethyl-m-tyramine (H 77/77) in rats.** Psychopharmacology (Berlin). 54(2):153-157, 1977.

To elucidate the noradrenergic mechanism of amphetamine and H77/77 induced grooming, rats were kept on a 12 h light/dark cycle, and physiological saline, (+)-amphetamine 1mg/kg, and h 77/77 5-mg/kg were injected s.c. after the light was switched on. Number of groomings was counted 1 to 2 h after treatment. Amphetamine and H77/77 increased grooming, which was antagonized by the tyrosine hydroxylase inhibitor H44/68 (250mg/kg), the dopamine-beta-hydroxylase inhibitor FLA63 (40mg/kg), the neuroleptics haloperidol (0.1and 0.15mg/kg) and clozapine (1 and 5mg/kg). Amphetamine induced grooming was also antagonized by the NA receptor blocker aceperone, but not by the sedative phenothiazines mepazine and diphenhydramine, nor by diazepam. Results indicated that NA release is involved in mediation of amphetamine and H77/77 induced grooming. The inhibition of haloperidol and clozapine were presumably due to NA receptor blockade. 47 references. (Author abstract modified)

000398 Lassen, J. Buus; Squires, R. F. Research Laboratories, A/S Ferrosan Sydmarken 1-5, DK-2860, Soeborg, Denmark **Inhibition of both MAO-A and MAO-B required for the production of hypermotility in mice with the 5HT uptake inhibitors chlorimipramine and femoxetine.** Neuropharmacology (Oxford). 16(7/8):485-488, 1977.

The effects of the 5-hydroxytryptamine (5HT) uptake inhibitors chlorimipramine and femoxetine on hypermotility if both monoamine oxidase-type A (MAO-A) and monoamine oxidase-type B (MAO-B) are inhibited were investigated in mice. Alone, the 5HT uptake inhibitors had no effect on motility of mice kept in a familiar cage. Similarly, pretreatment with clorgyline (a selective inhibitor of MAO-A) or L-deprenyl (a selective inhibitor of MAO-B) followed by administration of either of the 5HT pump blockers had no effect on motility. However, pretreatment with a combination of clorgyline plus deprenyl, followed by either chlorimipramine or femoxetine, resulted in strong hypermotility. These results indicate that hypermotility seen after administration of a 5HT pump blocker to mice pretreated with a MAO inhibitor depends on inhibition of both MAO-A and MAO-B and is due to a high extraneuronal concentration of 5HT. 35 references. (Author abstract modified)

000399 Le Moal, M.; Galey, D.; Stinus, L.; Simon, H. Psychophysiologie, Biologie Animale, Universite de Bordeaux I, F-33405 Talence Cedex, France **Further evidences on the behavioural effects of selective A-10 dopaminergic mesencephalo-cortico-limbic group lesion in the rat.** Brain Research (Amsterdam). 127(2):386, 1977.

Further evidence of the behavioral effects of selective A-10 dopaminergic mesencephalo/cortico/limbic group lesion in the rat were presented at the 8th Annual Meeting of the European Brain and Behaviour Society in Copenhagen, August 1976. Experiments have been carried out with 150 rats in order to specify some behavioral functions of the mesencephalo/cortico/limbic dopaminergic A-10 group. Lesions of the A-10 cells were made with 6-hydroxydopamine. Two small volumes of local injections were used at only one concentration (2 microgram/l microliter or 1 microgram/0.5microliter bilaterally). Three experiments have been made. The effects of the 6-hydroxydopamine (6-OHDA) injections were tested on locomotor activity measured in a circular corridor, 10 and 30 days after operations. Lesion of A-10 neurones induced hyperactivity mainly during nocturnal (dark) periods, but not during exploratory phases of the novel environment. The larger the injection, the more important was the perturbation. Local injection of 6-OHDA in the substantia nigra compacta, in the noradrenergic ventral bundle, in the area of the dorsal periventricular system/tegmental radiations, did not provoke locomotor hyperactivity. Radiofrequency lesions of the median raphe induced just significant hyperactivity, only during exploratory phases and not during night (dark) periods. It was concluded that neither the neighboring CA systems nor the median raphe are involved in the ventral tegmental 6-OHDA lesion syndrome. Anatomical controls (Fink-Heimer stain) demonstrated that the 6-OHDA did not destroy fibres other than catecholaminergic. Hypotheses were made about a possible general inhibitory role of the A-10 in behavior in the sense of selective and attentive arousal ability. (Author abstract modified)

000400 Leander, J. David; McMillan, D. E. Department of Pharmacology, School of Medicine, University of North Carolina, Chapel Hill, NC 27514 **Meperidine effects on schedule-controlled responding.** Journal of Pharmacology and Experimental Therapeutics. 201(2):434-443, 1977.

The effects of meperidine were studied on responding by pigeons under a multiple fixed ratio, fixed interval schedule of food presentation. Low doses of meperidine generally increased and higher doses decreased responding under the fixed interval component of the multiple schedule. The responding under the fixed ratio component was usually unaffected by low doses and decreased by doses greater than 3mg/kg of meperidine. Naloxone antagonized the rate increases in the fixed interval component; however, no dose of naloxone or cyclazocine antagonized the rate decreases produced by meperidine under either schedule component. The effects of morphine and meperidine were compared in two birds treated daily with methadone. In a bird maintained on a daily dose of 120mg/kg of methadone, there was a 10 fold shift of the dose/effect curve for morphine but not shift of the meperidine dose/effect curve. In a bird maintained on a daily dose of 30mg/kg of methadone, there was a 3 to 5 fold shift of the morphine dose/effect curve, but again no shift of the meperidine dose/effect curve. Thus, the rate/decreasing effects of meperidine were not antagonized by narcotic antagonists, nor did they show cross tolerance to methadone. 62 references. (Author abstract)

000401 Lemberger, Louis; Kellams, Jeffrey J.; Small, Joyce G.; Rowe, Howard. Dept. of Pharmacology, Indiana University School of Medicine, Indianapolis, IN 46202 **The effect of L-dopa and lergotrile mesylate on the interaction of fluphenazine decanoate and amphetamine-induced stereotypy and mortality.** Communications in Psychopharmacology. 1(5):501-506, 1977.

The effects of L-dopa and lergotrile mesylate on the interaction of fluphenazine decanoate and amphetamine induced stereotypy and mortality were studied in rats. An animal model utilizing amphetamine stereotypy was designed to simulate the clinical situation. Rats were treated with fluphenazine decanoate (10mg/kg) prior to administration of amphetamine (20mg/kg). Results indicated that phenothiazine completely protected the rats against the lethal effects of amphetamine; the rats also showed no stereotypic behavior. In rats given L-dopa, the protective effect of fluphenazine on lethality was reversed in a dose related manner. Those animals treated with lergotrile did not demonstrate any increase in mortality. The administration L-dopa produced a dose dependent increase in amphetamine induced stereotypy, whereas lergotrile produced only a minimal increase in amphetamine effects. The failure of lergotrile to reverse the fluphenazine blockade of amphetamine stereotypy in animals in contrast to L-dopa suggests that in this animal model lergotrile behaves in a different manner than in the clinical situation, where it excerbates schizophrenic symptomatology. 24 references. (Author abstract modified)

000402 Levett, Ann; Saayman, G. S.; Ames, F. Department of Psychology, University of Cape Town, Rondebosch, Cape, South Africa **The effects of Cannabis sativa on the behavior of adult female chacma baboons (Papio ursinus) in captivity.** Psychopharmacology (Berlin). 53(1):79-81, 1977.

Indices of locomotor and social activity were quantified during 102 h of daily tests with two pairs of baboons under three conditions: baseline, cannabis administration, and postdrug withdrawal. Six percent of whole dried plants of cannabis (33g) was incorporated into the daily feed. In one pair, social activity increased during cannabis administration, with no clear effect on locomotor behavior. In the second pair locomotor activity decreased, but there was no consistent change in social interaction. Thus individuals responded differently to the drug, and the social environment of each pair appeared to be implicated as a determining factor. 10 references. (Author abstract)

000403 Lodder, J.; Baum, M. J. Department of Endocrinology, Growth, and Reproduction, Erasmus University, Box 1738, Rotterdam, Netherlands **Facilitation of mounting behavior by dihydrotestosterone propionate in castrated estradiol benzoate-treated male rats following pudendectomy.** Behavioral Biology. 20(1):141-148, 1977.

The effects of dihydrotestosterone propionate (DHTP) on mounting behavior in castrated estradiol benzoate (EB) treated male rats were studied both before and after pudendal nerve transection. Mounting and intromission rates together with the incidence of ejaculation were significantly higher in castrated male rats treated daily either with EB . DHTP or with testosterone propionate (TP), than in males which received only EB. Bilateral section of the pudendal nerves, which disrupted somatosensory afferents from the penis as well as efferent fibers mediating penile erection, eliminated intromission and ejaculation behavior in all rats; however, the previously obtained differences in mounting rates persisted. In a second experiment, it was found that DHTP also stimulated heightened mounting rates in long-term castrated EB treated males after bilateral pudendal nerve transection. These results

suggest that the stimulatory effect of 5 ALPHA reduced matabolites of testosterone on the penis cannot account for their facilitatory effect on mounting. It is concluded that 5 ALPHA reduced and estrogenic metabolites of testosterone act synergistically in the rat brain to activate mounting behavior. 16 references. (Author abstract modified)

000404 Lowy, K.; Abood, M. E.; Drexler, M.; Abood, L. G. Center for Brain Research, University of Rochester Medical Center, Rochester, NY 14642 **Antagonism by cholinergic drugs of behavioural effects in cats of an anticholinergic psychotomimetic drug and enhancement by nicotine.** Neuropharmacology (Oxford). 16(6):399-403, 1977.

The effects of an anticholinergic psychotomimetic drug, N-methyl-4-piperidyl isopentynylphenyl glycolate, on behavior in cats, as assessed by pressing of a lever whose location corresponded to one of two sound sources, and the antagonism of various cholinergic agents on these behavioral effects are reported. Among the parameters significantly modified by the psychotomimetic drug were the number of responses during a session and the lateral preference for the use of left or right levers. Physostigmine almost completely antagonized the effects on these parameters. Tetrahydroaminoacridine, which has the same anticholinesterase activity as physostigmine, produced a similar but lesser antagonism. Arecoline, a muscarinic agent, had a slight antagonistic effect, while nicotine significantly enhanced the action of the glycolate. The results support the hypothesis that the behavioral effects of the anticholinergic psychotomimetics involve largely muscarinic neurones. 15 references. (Author abstract modified)

000405 Marsden, C. A.; Curzon, G. Department of Neurochemistry, Institute of Neurology, Queen Square, London WC1 3BG, England **Effects of p-chlorophenylalanine and alpha-methyltryptophan on behaviour and brain 5-hydroxyindoles.** Neuropharmacology (Oxford). 16(7/8):489-494, 1977.

The effects of two drugs that reduce brain 5-hydroxytryptamine (5-HT) synthesis by different mechanisms (p-chlorophenylalanine (p-CPA) and alpha-methyltryptophan) were compared in rats. Locomotor activity and home cage behavior during the dark period, food intake, and brain 5-HT and 5-hydroxyindoleacetic acid concentrations were measured. p-CPA, which decreases brain 5-HT by inhibiting tryptophan hydroxylase, increased locomotion and social behavior, but reduced self-grooming. Alpha-methyltryptophan, which decreases brain 5-HT synthesis by lowering brain tryptophan through the induction of tryptophan pyrrolase, did not significantly alter locomotion or social behavior, but increased self-grooming and burrowing. Both drugs appeared to reduce 5-HT turnover since they decreased 5-hydroxyindoleacetic acid concentrations. When tryptophan hydroxylase was inhibited by pretreatment with p-CPA, subsequent administration of alpha-methyltryptophan did not significantly alter the behavioral effects of p-CPA. Results are consistent with the behavioral effects of alpha-methyltryptophan caused by alpha-methyl-5-hydroxytryptamine which is synthesized from it by the action of tryptophan hydroxylase. 24 references. (Author abstract modified)

000406 Martinez, Joe L., Jr.; Vasquez, Beatriz J.; Jensen, Robert A.; McGaugh, James L. Department of Psychobiology, School of Biological Sciences, University of California, Irvine, CA 92717 **Facilitation by reserpine of retention in an inhibitory avoidance task in mice.** Behavioral Biology. 21(1):151-156, 1977.

The effects of reserpine on the retention of an inhibitory avoidance step through task in Swiss-Webster mice were investigated. Reserpine was given either 6 hr before training, immediately after training, or 6 hr after training, and a retention test was given 3 days later. Two levels of footshock were used. In the 350microAmp A condition, 3.0mg/kg of reserpine given 6 hr posttrial significantly facilitated retention. In the 2mA condition, 3.0mg/kg given immediately after training facilitated retention. These results do not support those results previously reported for reserpine. 19 references. (Author abstract)

000407 Masen, S. T.; Iversen, S. D. Department of Experimental Psychology, University of Cambridge, Cambridge, England **Role of the dorsal noradrenergic bundle in behaviour control.** Brain Research (Amsterdam). 127(2):382-383, 1977.

The role of the dorsal noradrenergic bundle in behavior control was discussed in a paper presented at the 8th Annual Meeting of the European Brain and Behaviour Society in Copenhagen, August 1976. Animals were tested on acquisition of a food rewarded maze running habit and on acquisition of a CRF schedule for food reward. In extinction of both tasks the treated animals showed slower extinction. The treated animals were impaired on acquisition of a successive discrimination due primarily to their slowness in suppressing responding in the unrewarded periods. Acquisition of a DRL15" schedule however was not impaired. Acquisition of a complex motor learning task was as rapid in the treated animals as in controls, but again resistance to extinction was observed. By contrast, acquisition of the ball in the tunnel task was impaired following an intraventricular 6-hydroxydopamine treatment which depleted both forebrain noradrenaline and dopamine (DA). The findings are interpreted as evidence for the role of the dorsal NA bundle in extinction but not in general acquisition learning. Brain DA seems more implicated in the acquisition learning process. (Author abstract modified)

000408 McMillan, Donald E. Dept. of Pharmacology, University of North Carolina, Chapel Hill, NC **Animal models of oral drug self-administration.** Psychopharmacology Bulletin. 13(1):38-39, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, a study in which three different methods were used to induce rats to drink drug solutions to study viable animal models of oral drug self-administration which may mimic consumption by human drug abusers is reported. The methods, which used narcotic analgesics, were: 1) water deprived forced drinking; 2) schedule induced polydipsia; and 3) operant drinking where food pellets were produced under a fixed-interval schedule, but by licks on a drinking tube rather than lever pressing. Under the forced drinking model, rats consumed large doses of morphine, methadone, etonitazene, meperodone, and levorphanol. The schedule induced polydipsia and the operant models resulted in even greater ingestion of narcotic analgesics. Injection of naloxone, a narcotic antagonist, resulted in symptoms of withdrawal, indicating that physical dependence can be produced by these methods. It is suggested that the oral ingestion of narcotic analgesics in rats can be a reinforcing event similar to that observed in humans. 5 references.

000409 Meldrum, Brian S.; Anlezark, Gill M.; Marsden, C. David. Department of Neurology, Institute of Psychiatry, De Crespigny Park, London SE5 8AF, England **Acute dystonia as an idosyncratic response to neuroleptics in baboons.** Brain (London). 100(2):313-326, 1977.

To determine a model of acute dystonic response to neuroleptics in baboons, 25 adolescent baboons, Papio papio, were intravenously administered neuroleptics and related drugs. Two consistently showed acute dystonic reactions, with mouthing, complusive gnawing, and limb and trunk dystonia. The syndrome was not seen after thioridazine injection. The dystonic responses occurred within 1 to 2 hrs of drug injection and lasted for 2 to 24 hrs. They were abolished for 1 to 3 hrs within 1 to 2 min of the intravenous injection of acetylcholine antagonists. Pretreatment with a combination of reserpine and sigma-methylparatyrosine substantially reduced the dystonic response to haloperidol. A second larger dose of haloperidol initially reduced the intensity of the dystonic response, but after 29 min induced vomiting and generalized seizures in the idiosyncratic baboons. It is suggested that the dystonic responses result from release of dopamine on to a subpopulation of receptors in the striatum that are relatively insensitive to blockade by neuroleptics. 33 references. (Author abstract modified)

000410 Mellanby, Jane; Grahame-Smith, D. G. Department of Experimental Psychology, University of Oxford, South Parks Road, Oxford, England **The effect of intracerebral injection of cycloheximide on brain protein synthesis and on the hyperactivity syndrome produced by a monoamine oxidase inhibitor and tryptophan.** Neuropharmacology (Oxford). 16(7/8):541-544, 1977.

An assessment of the importance of active brain protein synthesis in the ability of drugs to evoke the hyperactivity syndrome was made by achieving preferential blocking of brain protein synthesis by injecting inhibitors of protein synthesis directly into the cerebrospinal fluid in rats. A comparison was made of the relative effectiveness of injecting cycloheximide either intraperitoneally or into the subarachnoid space in suppressing the hyperactivity syndrome produced by subsequent intraperitoneal injection of tranylcypromine followed by L-tryptophan. It was found that cycloheximide was more effective at blocking the hyperactivity syndrome when it was injected intracerebrally than injected intraperitoneally. However, when the ability of this dose of cycloheximide administered to block total brain protein synthesis was compared, it was found that the two routes were equally effective. Results did not provide evidence that the greater effectiveness of the intracerebrally injected cycloheximide in blocking hyperactivity was due to its being better at blocking brain protein synthesis. It is conlcuded that direct action of cycloheximide on the brain itself that is responsible for blocking hyperactivity. 5 references.

000411 Meyerson, B. J.; Malmnas, Carl Olof. Department of Medical Pharmacology, University of Uppsala, Uppsala, Sweden **Monoaminergic implication in different elements of sexual behaviour.** Brain Research (Amsterdam). 127(2):377-378, 1977.

The monoaminergic implications of different elements of sexual behavior in male and female rats were discussed in a paper presented at the 8th Annual Meeting of the European Brain and Behaviour Society in Copenhagen, August, 1976. The female copulatory behavior induced by estradiol benzoate (OeB) plus progesterone was inhibited by increased serotonergic and dopaminergic activity, whereas the testosterone propionate (TP) activated copulatory behavior in the male is inhibited by decreased dopaminergic activity and facilitated by increased dopaminergic activity. It is possible to activate male like copulatory behavior in the female rat by testosterone treatment. Apomorphine increased the mounting behavior in the female. In contrast, the lordosis response was decreased after apomorphine. In the male rat lordosis behavior can be activated by estrogen treatment. Apomorphine significantly reduced this response. In contrast, amine depletion by reserpine or impaired monoaminergic biosynthesis by p-chlorophenylalanine or alpha-methyl-p-tyrosine significantly increased the lordosis response in the estrogen treated male rats. The data would be in line with the hypothesis that the heterotype behavior in one sex has analogous monoaminergic pathways as the homotype behavior in the opposite sex. 4 references. (Author abstract modified)

000412 Michanek, Annika; Meyerson, Bengt J. Dept. of Medical Pharmacology, University of Uppsala, Box 573, S-751 23 Uppsala, Sweden **A comparative study of different amphetamines on copulatory behavior and stereotype activity in the female rat.** Psychopharmacology (Berlin). 53(2):175-183, 1977.

The influence of d-amphetamine and l-amphetamine, fenfluramine, and p-chloroamphetamine on female copulatory behavior (lordosis response) and the induction of stereotype activity was compared. Lordosis response in the female rat has been shown to be inhibited by increased central nervous serotonergic (5-HT) as well as dopaminergic (DA) activity. The data suggest that the d-amphetamine effect on lordosis behavior is mediated by increased DA receptor activity. Although it induces stereotype activity by increased DA activity, l-amphetamine, like fenfluramine and p-chloroamphetamine, inhibits the lordosis response by some other action presumably related to serotonergic mechanisms. 43 references. (Journal abstract modified)

000413 Miczek, Klaus A.; Barry, Herbert, III. Department of Psychology, Carnegie-Mellon University, Pittsburgh, PA 15213 **Effects of alcohol on attack and defensive-submissive reactions in rats.** Psychopharmacology (Berlin). 52(3):231-237, 1977.

The effects of alcohol on attack and defensive submissive reactions in rats were studied when either the dominant or subordinate animal in a pair was given the drug. Intense fighting episodes, consisting of all major acts and postures of attack, threat, defense, and submission, were generated between two otherwise isolated male rats in a situation in which the accustomed food reinforcement was omitted. Alcohol (10% w/v) was administered intraperitoneally 10 min prior to the fighting test. A low dose (0.5g/kg), when given to the dominant animal, increased the frequency of biting attack and prolonged the display of the aggressive posture. Higher doses of alcohol (1.0, 1.5g/kg) suppressed attack behavior and, when given to the subordinate animal, impaired defensive upright postures. In a further experiment, animals without fighting or drug experience were subjected to attack by a non-treated dominant animal. When treated with alcohol (1.0, 1.5g/kg) naive rats were more frequently attacked and injured, but reacted more readily to initial attacks by submissive supine postures. The results demonstrate differential effects of alcohol depending on the type of drug recipient (dominant, experienced subordinate, or naive). The drug had greater effect on attack behavior than on defensive/submissive reactions. 27 references.

000414 Miksic, Stephen; Lal, Harbans. Department of Pharmacology and Toxicology, College of Pharmacy, University of Rhode Island, Kingston, RI 02881 **Tolerance to morphine-produced discriminative stimuli and analgesia.** Psychopharmacology (Berlin). 54(2):217-221, 1977.

To study tolerance to morphine produced discriminative stimuli and analgesia, male hooded rats were trained in Skinnerboxes to press one lever afrer a 10mg/kg morphine injection and another lever after 1ml/kg saline injection on an FR 10 schedule of food reinforcement. After drug discrimination was well established, rats were tested for stimulus generalization at different morphine doses, followed by assessment of tail withdrawal latency as a measure of analgesia. Ss were then administered increasing doses of morphine sulfate to induce an increased level of tolerance. New dose/response curves indicated that tolerance developed to the morphine induced discriminative stimulus, and to the analgesic action of morphine, but drug doses that failed to cause detectable analgesia still priduced a pronounced discriminative stimulus. 16 references. (Author abstract modified)

000415 Mitchell, Denis; Fairbanks, Marcus; Laycock, J. D. NIEHS, P.O. Box 12233, Research Triangle Park, NC 27709 **Suppression of neophobia by chlorpromazine in wild rats.** Behavioral Biology. 19(3):309-323, 1977.

Three experiments investigated the effects of the tranquilizer, chlorpromazine, on neophobia (innate fear of novel stimuli) in the wild rat (Rattus norvegicus). In a laboratory test, treatment with chlorpromazine facilitated consumption from a novel food source and mitigated the decrease in consumption from a familiar food source when novel stimuli were introduced. In the first field test, treatment with chlorpromazine increased trapping success. In the second field test, treatment with chlorpromazine increased trapping success and mitigated the suppression in consumption from a familiar bait box that usually occurs when traps are set out. A second laboratory test showed that the results of the three preceding experiments were not due to the enhanced preference for sweet tasting substances caused by the chlorpromazine. Several implications and potential uses of the techniques employed are discussed. Because of the crucial role that neophobia plays in the trap and poison avoidance behavior of the rat, methods of circumventing this innate fear of novel foods and objects should greatly facilitate existent methods of rodent control. 36 references. (author abstract modified)

000416 Montanaro, N.; Strocchi, P.; Dall'Olio, R.; Gandolfi, O. Institute of Pharmacology, University of Bologna, Bologna, Italy **Recovery of amnestic effect of alpha-amanitin by post-training administration of d-amphetamine in the rat.** Neuropsychobiology (Basel). 3(1):1-11, 1977.

The effect of posttraining administration of D-amphetamine sulfate in the rat on removing or partially antagonizing the amnestic effect of alpha-amanitin was investigated. Administration of alpha-amanitin prior to training impaired consolidation of both passive and active avoidance responses. Administration of d-amphetamine sulfate immediately after training produced a clear cut antiamnestic effect in alpha-amanitin injected rats without modifying consolidation in control animals. Examination of several parameters of conditioning appear to rule out an impairment in locomotor performance of alpha-amanitin treated rats both in training and in test sessions. The amnestic effect of alpha-amanitin and recovery by means of d-amphetamine are discussed in relation to RNA synthesis inhibition and a possible restoring effect of d-amphetamine on alpha-amanitin induced decrease of brain RNA content. 24 references. (Author abstract modified)

000417 Moreton, J. Edward; Meisch, Richard A.; Stark, Linda; Thompson, Travis. Dept. of Pharmacology and Toxicology, Univ. of Maryland School of Pharmacy, 636 W. Lombard St., Baltimore, MD 21201 **Ketamine self-administration by the rhesus monkey.** Journal of Pharmacology and Experimental Therapeutics. 203(2):303-309, 1977.

To investigate the effects of varying the magnitude of reinforcement and fixed-ratio response requirement on the rate and pattern of responding and the drug intake during ketamine self-administration, intravenously administered ketamine served as a reinforcer of self-administration behavior in rhesus monkeys during daily 2 hour sessions. When the dose of ketamine was varied over a wide range at fixed-ratio schedules of reinforcement of 1, 8, and 64, the response rate was an inverted U-shaped function of the dose. Maximal response rates occurred at progressively higher doses as the fixed-ratio size was increased; drug intake per session was positively related to the dose. Since the response rate increased linearly as the fixed-ratio was increased geometrically, drug intake was a decreasing function of the response requirement. With respect to magnitude of reinforcement and fixed-ratio response requirement, the data show that ketamine maintains self-administration behavior in a manner similar to that of a number of other drugs and conventional reinforcers. 37 references. (Author abstract modified)

000418 Nakamura, Mitsutaka; Fukushima, Hideaki. Research and Development Center, Pharmaceuticals Div., Sumitomo Chemical Co., Ltd., Hyogo, 665, Japan **Effect of benzodiazepines on central serotonergic neuron systems.** Psychopharmacology (Berlin). 53(2):122-126, 1977.

A study of the action of benzodiazepines on serotonergic neurotransmission in mico is presented. Effects of the administration of fludiazepam and diazepam to potentiate head twitches induced by mescaline are described. It is suggested that the pharmacological action of benzodiazepines is derived at least in part from their activating effect on serotonin receptors. 27 references. (Journal abstract modified)

000419 Nichols, D. E.; Pfister, W. R.; Yim, G. K. W.; Cosgrove, R. J. Department of Medicinal Chemistry and Pharmacognosy, Purdue University, West Lafayette, IN 47907 **A new view of the structural relationship between LSD and mescaline.** Brain Research Bulletin. 2(3):169-171, 1977.

To elucidate the structual relationship between lysergic acid diethylamide (LSD) and mescaline, an examination of the effects of S and R 2-ammino-1,2,3,4-tetrahydronaphthalene (2-AT) on mouse spontaneous activity and rabbit EEG was undertaken. Results indicate that the S enantiomer shows selective central effects similar to those of hallucinogens like mescaline. A stereochemical analysis of these results indicates that the structural relationship between mescaline, or other phenethylamine type hallucinogens, may involve correspondence between the aromatic ring of the phenethylamines and the pyrrole portion of the indole nucleus in LSD. 18 references. (Author abstract modified)

000420 Nielsen, Erik B. Psychopharmacological Research Laboratory, Department E., Sct. Hans Mental Hospital, DK-4000 Roskilde, Denmark **Long-term behavioural and biochemical effects following prolonged treatment with a neuroleptic drug (flupenthixol) in rats.** Psychopharmacology (Berlin). 54(2):203-208, 1977.

The effects of long-term treatment (36 weeks) with a neuroleptic drug (flupenthixol) were investigated behaviorally and biochemically in rats. A group of 16 Ss were trained on a DRL 15 schedule until stable responding was obtained. During the following 36 weeks, 9 Ss were injected weekly with flu-

penthixol dissolved in Viscoleo and 7 Ss received Viscoleo alone. Retesting on DRL 7 weeks after the last drug injection yielded highly significant differences between drug treated animals and controls. Some deficits in neurological differences also occurred. At sacrifice 14 to 18 weeks after the last injections, a nonsignificant increase (25%) occurred in corpus striatum dopamine metabolite HVA, while the noradernergic metabolite 3-methoxy-4-hydroxyphenylglycol was significantly decreased by 14% in treated Ss. The possibility is raised of persistent functional and biochemical effects produced by prolonged treatment with a neuroleptic drug. 25 references. (Author abstract modified)

000421 Oades, Robert; Isaacson, Robert L. Zoologisches Institut der Technischen Hochschule, Schnittpahnstrasse 3, 61 Darmstadt, Germany **Para-Chlorophenylalanine-produced effects on behavior in intact and brain-damaged rats.** Behavioral Biology. 20(4):500-506, 1977.

To determine if a reduction in serotonin (5-HT) synthesis would provide any protection from the behavioral effects of hippocampal damage, the behavior of rats with such damage, of rats with only neocortical damage, and of sham operates was examined in two experimental situations. Half of each group had been treated with 300mg/kg of parachlorophenylalanine (PCPA) for 3 successive days before surgery, and half were given control injections of saline during this period. In the first group, locomotor, rearing, and grooming were observed over a 2 week period postoperatively in an open field. In the second group, rats were tested on the acquisition of a passive avoidance task 2 weeks after surgery. Animals with hippocampal damage became hyperactive in the second week of testing, but no reduction in this activity was produced by the drug administration. Rearing was initially depressed in animals with hippocampal damage, and PCPA facilitated its recovery but decreased the rearing of intact animals during the second testing week. Results are seen to support the suggestion that certain serotonergic influences are mediated by dorsal hippocampal areas. 23 references. (Author abstract)

000422 Ogren, S.-O.; Ross, S. B. Research and Development, Astra Lakemedel AB, Sodertalje, Sweden **Effects of reduced cerebral serotonin on learning.** Brain Research (Amsterdam). 127(2):379-381, 1977.

The effects of p-chloroamphetamine (PCA) induced depletion of 5-hydroxytryptamine (5-HT) on two way active avoidance responding in the rat were discussed in a paper presented at the 8th Annual Meeting of the European Brain and Behaviour Society in Copenhagen, August, 1976. PCA strongly impaired the acquisition and also the retention of the two-way active avoidance response. The administration of PCA lowered brain 5-HT by approximately 75% with a concomitant decrease in the uptake of (14C)5-HT uptake into synaptosomes prepared from the forebrain. significant effect on dopamine and noradrenaline levels was found. Pretreatment with the 5-HT selective uptake inhibitor prevented the reduction of 5-HT levels and the blockage of (14C)5-HT uptake into synaptosomes caused by PCA. H-102/09 was also found to inhibit the detrimental effect of PCA on the two-way response. Treatment with PCA did not cause an increased sensitivity to external stimulation such as sound, electrical shocks, and heat. These results demonstrate that 5-HT depletion induced by PCA, PCPA or lesions in the raphe nuclei causes quite different effects on behavior, which indicates that 5-HT depletion per se does not induce unitary behavioral effects. It is therefore possible that there exist different 5-HT systems in the brain which regulate different aspects of behavior. On the basis of these and previous evidence, it was concluded that such a 5-HT system may directly or indirectly be involved in behaviors motivated by negative reinforcement. 11 references. (Author abstract modified)

000423 Ohara, Ikuo; Naim, Michael. Central Research Laboratories, Ajinomoto Company, Inc., Yokohama, Japan **Effects of monosodium glutamate on eating and drinking behavior in rats.** Physiology & Behavior. 19(5):627-634, 1977.

The effect of monosodium glutamate (MSG) on eating and drinking behavior of rats was studied by means of preference in free choice situations. Low or high protein casein diets containing up to 3% MSG were selected indifferently compared to plain casein diet in 7 day trials. The acceptability of diets containing 7% MSG, particularly those of low protein level, was significantly reduced. Except for Day 1, the proportional intake (MSG flavored diet intake/total diet intake) of 9% protein/7% MSG diet was consistently lower than 18% protein/7% MSG diet. In brief exposure tests (10 min) solutions of MSG were preferred over deionized water. The acceptance of solutions containing higher concentrations of MSG was significantly reduced. The total volume intake of both choices (MSG flavored water and water) was significantly increased in tests using solutions containing 3 to 8% MSG. In long-term tests, solutions containing 0.05 to 1% MSG were preferred over water. The acceptance of a solution containing 5% MSG was significantly reduced. For maximum intake of moles of MSG, rats selected solutions which offered 3-5X10-1M MSG whether the experimental period was 10 min or up to 2 weeks. In a series of two choice preference tests using solutions, where Na+ content and pH were kept equal, MSG was preferred over sodium acetate and over sodium glutarate but was less preferred than monosodium aspartate. The results of this study are explained in terms of sensory quality. 34 references. (Author abstract)

000424 Okada, Yoshio; Tuchiya, Yuko; Yagyu, Masami; Kozawa, Shunji; Kariya, Kimio. Kobe Gakuin University, Tarumi-ku, Kobe, 673, Japan **Synthesis of bradykinin fragments and their effect on pentobarbital sleeping time in mouse.** Neuropharmacology (Oxford). 16(5):381-383, 1977.

Several peptide fragments related to bradykinin were synthesized and tested in mice for their ability to prolong pentobarbital sleeping. Similarly to bradykinin, Gly-Phe-Ser-Pro (II), Ser-Pro (VII) and Phe-Ser-Pro (IX) injected intracerebrally prolonged the sleeping time of pentobarbital. The results suggest that the structure of Ser-Pro at the C-terminal position is necessary to prolong sleeping time. (Author abstract modified)

000425 Overstreet, David H. School of Biological Sciences, Flinders University of South Australia, Bedford Park, South Australia 5042 **Pharmacological approaches to habituation of the acoustic startle response in rats.** Physiological Psychology. 5(2):230-238, 1977.

The effects of pharmacological manipulations of the cholinergic (Diisopropylfluorophosphate (DFP), physostigmine, atropine, pilocarpine), the noradrenergic and dopaminergic (d-amphetamine), and the serotonergic (p-chlorophenylalanine and p-chloroamphetamine) systems on habituation of the acoustic startle response in rats were examined in a series of six experiments. Only acute administration of DFP was found to significantly reduce the rate of habituation. There was a tendency of physostigmine and pilocarpine to depress the startle response and for atropine to facilitate it, suggesting that the cholinergic system may modulate the startle response level.

Manipulations of the noradrenergic, dopaminergic, and serotonergic systems did not alter either the startle response level or the rate of habituation. However, recent literature from other laboratories was reviewed, and it was concluded that the doses and/or other conditions used in the present experiments were not appropriate for observing significant changes in the startle response. It was further concluded that either the neurotransmitter systems examined in the present study were not involved in the processes underlying habituation or that the pharmacological manipulations used were not appropriate for differentiating among the mechanisms that may underlie habituation. 38 references. (Author abstract modified)

000426 Overton, Donald A. Dept. of Psychiatry, Temple University Medical Center, Philadelphia, PA 19129 **Discriminable effects of antimuscarinics: dose response and substitution test studies.** Pharmacology Biochemistry and Behavior. 6(6):659-666, 1977.

The relationship between dosage and the discriminable effects of antimuscarinic drugs, the common effects of antimuscarinic drugs, and the unique effects of antimuscarinics were investigated in rats. In a shock escape T-maze task, rats were trained to turn right following one drug treatment and left following a second drug treatment. The specific drug and dose conditions were the only discriminative cues available to the animals. The number of training sessions before criterion performance indicated the discriminability of the two training conditions. Drug vs no drug training showed that discriminability was proportional to dosage for low doses, but was constant over a range of higher doses. Such an asymptote of discriminability was observed with scopolamine, atropine, benactyzine and Ditran (JB 329), and was shown not to result from tolerance. High dose vs low dose discriminations involving scopolamine were learned very slowly if both doses were within the asymptotic range; this indicates that similar discriminable effects were produced by high and low doses. The four antimuscarinic drugs generally substituted for one another but did not mimic and were not mimicked by drugs in other pharmacological classes. The discriminable effects of scopolamine were partially antagonized by physostigmine. The results indicate that the antimuscarinic drugs share discriminable actions probably produced by their anticholinergic actions. The asymptote of action at high doses appears genuine, possibly reflecting receptor saturation. 19 references. (Journal abstract modified)

000427 Palfai, Tibor; Walsh, Thomas J.; Albala, Bruce J.; Brown, Oliver M. M-15 Skytop, Dept. of Psychology, Syracuse University, Syracuse, NY 13210 **Effects of l-dihydroxyphenylalanine (l-dopa) and d,l,5-hydroxytryptophan (d,l,5-HTP) on reserpine-induced amnesia.** Psychopharmacology (Berlin). 53(3):269-276, 1977.

In a series of experiments the effects of reserpine, l-dopa, and d,l,5-hydroxytryptophan (d,l,5-HTP) on retention of a passive avoidance training in mice were investigated. Reserpine (2.5mg/kg) produced amnesia when given at 120 min before but not at 30 min before or at 0, 10, 30, or 90 min following training. This time dependent reserpine effect did not appear to be due to either an alteration in footshock sensitivity during training or to the drug producing state dependent learning. The amnesic effect of reserpine could be blocked when both l-dopa and d,l,5-HTP were also administered up to 10 min but not at 30 or 90 min following training. The drugs, l-dopa or d,l,5-HTP, given alone or in higher doses, could not at any time counteract the reserpine effect. The retrograde effects of the combined administration of these biogenic amine precursors on the reserpine induced amnesia are discussed in terms of the possible role of biogenic amines in memory formation. 30 references. (Author abstract)

000428 Panksepp, Jaak; Pollack, Alan; Meeker, Rick B. Dept. of Psychology, Bowling Green State University, Bowling Green, OH 43403 **(--)-Hydroxycitrate and conditioned aversions.** Pharmacology Biochemistry and Behavior. 6(6):683-687, 1977.

The capacity of various salts of hydroxycitrate to produce conditioned rejection of a 0.25% saccharin solution in rats was evaluated. The ethylenediamine salt of hydroxycitrate produced strong conditioned rejection of saccharin under both deprivation and nondeprivation conditions, but this effect was less than produced by equimolar doses of lithium chloride. The sodium salt of hydroxycitrate produced no conditioned rejection of saccharin in water deprived rats but did so in nondeprived animals. In these experiments, food intake was reduced by hydroxycitrate only during the first hour following administration of the drug. The magnitude of appetite rejection did not correspond to the degree of conditioned rejection, lending support to the conclusion that the food intake reduction was not merely a consequence of aversive effects of the drug. 11 references. (Journal abstract)

000429 Paxinos, G.; Burt, J.; Atrens, D. M.; Jackson, D. M. School of Psychology, University of New South Wales, Kensington, New South Wales 2033, Australia **5-Hydroxytryptamine depletion with para-chlorophenylalanine: effects on eating, drinking, irritability, muricide, and copulation.** Pharmacology Biochemistry and Behavior. 6(4):439-447, 1977.

The effect of para-chlorophenylalanine (PCPA) on 5-hydroxytryptamine (5-HT) depletion and on rat behavior was investigated. Males were tested for eating, drinking, irritability, and copulation before and after PCPA injections. PCPA rats showed significant increases in muricide, hyperdipsia, and weight loss, but no significant alteration in copulatory behavior. Intraperitonal injection of 5-HT in aggressive rate reversed irritability and decreased mouse killing. The various behavioral changes were not correlated significantly either with each other or with the degree of 5-HT depletion. It is suggested that PCPA may produce its effects on behavior by other means in addition to 5-HT depletion. 47 references. (Author abstract modified)

000430 Paxinos, George; Atrens, Dale M. School of Psychology, University of New South Wales, PO Box 1, Kensington, New South Wales 2033, Australia **5,7-Dihydroxytryptamine lesions: effects on body weight, irritability, and muricide.** Aggressive Behavior. 3(2):107-118, 1977.

The behavioral and physiological effects induced by subjecting 44 male rats to injections of 5,7-dihyroxytryptamine (DHT) at a level dorsal to the interpenduncular nucleus in order to destroy the ascending 5-hydroxytryptamine projection are studied. The injections resulted in depletion of forebrain 5-hydroxytryptamine, weight loss, irritability, and muricide. No significant correlations were found between any of these effects. It is suggested that the neural systems mediating regulation of bodyweight and muricide are substantially distinct. 28 references. (Author abstract modified)

000431 Pecile, A.; Olgiati, V. R.; Netti, C. School of Medicine, University of Milan, Milan 20129, Vanvitelli 32, Italy **Hypersensitivity of rats to anorectic agents after lesions in the ventromedial hypothalamus.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 226(1):48-55, 1977.

The hypersensitivity of rats to anorectic agents after lesions in the ventromedial hypothalamus was investigated. The subjects were Sprague-Dawley female rats; the agents tested were d-amphetamine and fenfluramine. A persistence and even a further increase of the hypersensitivity to anorectics was observed in animals which 8 months after ventromedial hypothalamus lesioning resumed almost normal eating patterns. The appearance of the hypersensitivity to anorectic agents after lesioning and its persistence or enhancement in long-term operated animals are interpreted in terms of the mechanisms contributing to the neural reorganization of the control of the feeding center after suppression of ventromedial inhibitory influences. 16 references. (Journal abstract modified)

000432 Pirch, James H. Texas Tech University School of Medicine, Lubbock, TX 79409 **Amphetamine effects on brain slow potentials associated with discrimination in the rat.** Pharmacology Biochemistry and Behavior. 6(6):696-700, 1977.

Differential slow potential (SP) responses that develop with discrimination conditioning in the rat was investigated and the effects of amphetamine on these responses examined. Slow potentials were recorded from the anterior cortex of rats during discrimination conditioning and the effects of various doses of d-amphetamine on these responses were examined. The rat developed differential SP responses to reinforced and nonreinforced stimuli in a discrimination paradigm and that d-amphetamine produces a differential and dose related alteration of these SP responses. It is suggested that the actions of amphetamine may be produced through interference with mechanisms of discrimination, by an effect on subcortical activating systems involving norepinephrine, and/or by activation of inhibitory dopamine receptors on cortical neurons. 20 references. (Journal abstract modified)

000433 Poschlova, N.; Masek, K.; Krsiak, M. Czechoslovak Academy of Sciences, Albertov 4, 12800 Prague 2, Czechslovakia **Amphetamine-like effects of 5,6-dihydroxy tryptamine on social behaviour in the mouse.** Neuropharmacology (Oxford) 16(5):317-321, 1977.

Effects of 1, 5 and 50 micrograms of 5,6-dihydroxytryptamine, administered intraventricularly, on brain 5-hydroxytryptamine and catecholamines and the behavior of singly housed male mice and on paired interactions with group housed partners were studied. 5,6-dihydroxytryptamine produced a dose dependent depletion of 5-hydroxytryptamine in the brain which was highly significant after 5 and 50 micrograms of 5,6-dihydroxytryptamine. On the other hand, depletion of brain catecholamines did not reach the level of significance. 5,6-dihydroxytryptamine inhibited aggressive activities (attacks, aggressive unrests, and tail rattles) and some social activities (sniffing and following partners), while it increased the incidence of alert postures. A similar profile of behavioral effects has been observed in the same experimental model after amphetamine. 24 references. (Author abstract)

000434 Prange, Arthur J., Jr.; Lipton, Morris A.; Bissette, Garth. Dept. of Psychiatry and Pharmacology, Biological Sciences Research Center, University of North Carolina, School of Medicine, Chapel Hill, NC **Behavioral effects of peptides in animals: further experience with pentobarbital antagonism.** Psychopharmacology Bulletin. 13(1):58-59, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, a study performed to determine whether ACTH analogs share the analeptic properties of thyrotropin releasing hormone (TRH) is reported. Some of the mice were injected intraperitoneally (ip) with TRH or an ACTH analog followed by pentobarbital, while others received pentobarbital first followed by the test substance intracisternally. TRH, administered centrally or peripherally, was the most potent antagonist of pentobarbital induced narcosis and hypothermia. Some of the ACTH related peptides had some analeptic activity. Two compounds were active via the central but not the peripheral route, ACTH4-7 and ACTH4-10 were inactive by either route, and ACTH4-7 amide and a substituted ACTH4-9 derivative were active by both routes. Leutinizing hormone releasing hormone was also a potent antagonist of pentobarbital when administered centrally. It is suggested that the congeners that are active centrally but not peripherally are either degraded rapidly or do not easily penetrate the brain. No clear correlation was found between pituitary potency (thyroid stimulating hormone releasing activity) and pentobarbital antagonism. 7 references.

000435 Pycock, C. J.; Jenner, P. G.; Marsden, C. D. Department of Pharmacology, Medical School, University of Bristol, Bristol, BS8 1TD, England **The interaction of clonidine with dopamine-dependent behaviour in rodents.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 297(2):133-141, 1977.

The effect of clonidine on behavioral parameters believed to be expressed through central dopaminergic mechanisms was studied in rodents. The compound potentiated the circling response to standard doses of apomorphine and amphetamine in lesioned mice, but had no effect on patterns of stereotyped behaviors induced by the dopamine agonist apomorphine in the rat. Bilateral injections of apomorphine and clonidine into the rat nucleus accumbens produced differing reactions. Clonidine potentiated the cataleptic effect of the dopamine antagonist haloperidol in rats. Clonidine therefore potentiated those behavioral responses exhibiting a locomotor component (circling and hyperactivity) but had no effect on stereotypy. The potentiation of catalepsy induced by clonidine was explained in nonspecific sedatory terms. It was concluded that clonidine acts through a secondary neuron system which modifies dopamine receptor stimulation effects, although the exact site of this interaction is unclear. Clonidine may inhibit 5-HT neuronal activity, and the possible relationships between 5-HT and noradrenaline and dopamine are discussed. 39 references. (Author abstract modified)

000436 Quinton, Elton E.; Kramarcy, Neal R. Department of Psychology, Neuropsychopharmacology Program, University of Louisville, Louisville, KY 40208 **Memory impairment correlates closely with cycloheximide dose and degree of inhibition of protein synthesis.** Brain Research (Amsterdam). 131(1):184-190, 1977.

To examine the relationship of cycloheximide (CYC) dosage to cerebral protein synthesis (CPS) inhibition and degree of memory impairment, a series of biochemical and behavioral studies were undertaken in mice utilizing a passive avoidance test procedure. Analysis of data indicated that when CYC is administered 30 min before passive avoidance training, it effectively impairs memory over a wide range of doses and that the degree of memory impairment is clearly dose dependent. For all groups showing significant memory impairment, protein synthesis was inhibited 88% or more at the time of training regardless of dose or injection/training interval, indicating that the critical variable determining severity of memory impairment is the degree of CPS inhibition at time of training and not the duration of severe CPS inhibition prior to training.

Data also suggest that memory mechanisms may recover more rapidly following CYC than does general CPS. 12 references.

000437 Rezek, M.; Havlicek, V.; Leybin, L.; Pinsky, C.; Kroeger, E. A.; Hughes, K. R.; Friesen, H. Dept. of Physiology, University of Manitoba, Winnipeg, Manitoba R3E OW3, Canada **Neostriatal administration of somatostatin: differential effect of small and large doses on behavior and motor control.** Canadian Journal of Physiology and Pharmacology (Ottawa). 55(2):234-242, 1977.

The administration of small doses of somatostatin (SRIF) into the neostriatal complex of unrestrained, freely moving rats was studied. SRIF induced general behavioral excitation associated with a variety of stereotyped movements, tremors, and a reduction of rapid eye movements (REM) and deep slow wave sleep (SWS). In contrast, the higher doses of SRIF caused movements to be uncoordinated and frequently induced more severe difficulties in motor control such as contralateral hemiplegia inextension which restricted or completely prevented the expression of normal behavioral patterns. As a result, the animals appeared drowsy and inhibited. Analysis of the sleep waking cycle revealed prolonged periods of a shallow SWS, while REM sleep and deep SWS were markedly reduced electroencephalogram recordings, revealed periods of dissociation from behavior. The administration of endocrinologically inactive as well as the active analogues of SRIF failed to induce effects comparable with those observed after the administration of the same dose of the native hormone. It was concluded that SRIF exerts a central, nonendocrine action. 15 references. (Author abstract modified)

000438 Rigter, Henk; Greven, Henk; van Riezen, Henk. Organon, Scientific Development Group, Oss, The Netherlands **Failure of naloxone to prevent reduction of amnesia by enkephalins.** Neuropharmacology (Oxford). 16(7/8):545-547, 1977.

The possibility that the physiological bases of the effects of the pentapeptides (met-enkephalin and leu-enkephalin) on amnesia and pain, respectively, are different was investigated by determining the effect of naloxone on the antiamnesic activity of the enkephalins in rats. It was demonstrated that the enkephalins attenuate in rats' carbon dioxide induced amnesia for an avoidance response when injected subcutaneously before a retrieval test, after pretraining. Administration of naloxone did not prevent the antiamnesic activity of the enkephalins, suggesting that the effects of these pentapeptides on amnesia are not mediated through opiate receptors. It is suggested that the antiamnesic activity of the enkephalins is distinct from the analgesic effects of these pentapeptides. 4 references. (Author abstract modified)

000439 Risner, Marc E.; Jones, B. E. National Institute on Drug Abuse, Lexington, KY 40511 **Characteristics of beta-phenethylamine self-administration by dog.** Pharmacology Biochemistry and Behavior. 6(6):689-696, 1977.

The ability of phenethylamine (PEA), a biologically active amine found in the brain, to maintain intravenous self-administration behavior by dogs previously trained to respond for amphetamine was investigated. Systematic changes in the unit dose of PEA were negatively related to the number of infusions per 4 hr session. Pretreatment with chlorpromazine produced a dose dependent increase in the number of self-administered PEA infusions. However, there were no changes in responding for PEA following pretreatment with either the dopaminergic antagonist pimozide or the adrenergic antagonist phenoxybenzamine. These data suggest that the reinforcing properties of PEA are not dependent on either a dopaminergic or adrenergic system. 27 references. (Journal abstract modified)

000440 Robbins, T. W. Psychology Laboratory, University of Cambridge, Cambridge, CB2 3EB, England **Reward enhancement by psychomotor stimulant drugs.** Neuropharmacology (Oxford). 16(7/8):529-530, 1977.

In a paper presented at the Proceedings of the British Association for Psychopharmacology, July 1976, Cambridge, England, the hypothesis that stimulants enhance the behavioral effects of previously neutral stimuli which become correlated with primary rewards (conditioned reinforcers) was tested by determining if a stimulant drug could facilitate rats' learning of a novel discrimination task reinforced merely by a conditioned reinforcer stimulus. Rats were trained to push a panel with their heads to obtain access to water in a dipper presented at aperiodic intervals, presentation being correlated with the onset of a light stimulus as the conditioned reinforcer. In a second experimental phase, no further presentations of water were provided, but responding on one of two levers produced the light stimulus previously correlated with water and responding on the other lever had no effect. Rats were divided into two groups of seven, receiving either pipradrol or control injections 15 minutes before each of three 30 minute sessions. There was a potent and selective facilitation of responding on the conditioned reinforcer lever in the pipradrol group compared with controls, but responding on the nonconditioned reinforcer lever did not differ significantly from controls. Results made it unlikely that the facilitation was due to nonspecific increases in responding. Drugged animals also showed a facilitation of learning of the spatial discrimination task compared with controls, with potentiation of responding by the drug dependent on conditioned rather than unconditioned properties of the conditioned reinforcer stimulus. Dose dependent relationships were also demonstrated. It was concluded that the enhancement of responding for conditioned reinforcer stimuli may be related to actions of amphetamine-like drugs in producing stereotyped behavior. 2 references. (Author abstract modified)

000441 Robbins, T. W.; Koob, G. F. Department of Experimental Psychology, University of Cambridge, Cambridge, England **Potentiation of brain reward mechanisms by psychomotor stimulant drugs.** Brain Research (Amsterdam). 127(2):383-384, 1977.

The effects of pipradrol on brain reward mechanism in conditioned reinforcement learning in the rat was discussed in a paper presented at the 8th Annual Meeting of the European Brain and Behaviour Society in Copenhagen, August, 1976. Pipradrol was shown to enhance the rewarding properties of stimuli which arise by temporal association with primary rewards. Pipradrol produced a potent facilitation of learning of a spatial discrimination task in thirsty rats to obtain merely a stimulus formerly correlated with the presentation of water. No facilitation occurred if the same stimulus was uncorrelated with water. In a second experiment, pipradrol also facilitated the learning of a similar task to obtain a stimulus formerly associated with brain stimulation reward, produced by electrodes implanted in the lateral hypothalamus. Facilitation of learning by pipradrol did not occur if the required task involved response sequencing. The drug disrupted performance by perseverative responding. The results suggest a relationship between reward enhancement and the perseverative and stereotyped behavior produced by stimulant drugs. Possible mediation by the dopaminergic neurotransmitter system was discussed. (Author abstract modified)

000442 Robbins, T. W.; Phillips, A. G.; Sahakian, B. J. Department of Experimental Psychology, University of Cambridge, Cambridge, England **Effects of chlordiazepoxide on tail pinch-induced eating in rats.** Pharmacology Biochemistry and Behavior. 6(3):297-302, 1977.

The effects of 5, 10, and 20mg/kg chlordiazepoxide on tail pinch (TP) induced eating behavior were investigated in rats. Dosage of 5mg/kg enhanced TP induced eating in terms of both latency and duration and 20mg/kg had decremental effects. All doses of the drug reduced the incidence of clip directed behavior, but increased locomotor activity during the TP trials in a dose dependent manner. On control trials, the drug increased locomotor activity at the low dose and eating at the high dose. The results are examined in terms of the various behavioral actions of the minor tranquilizers. The implications for the behavioral and neuropharmacological mechanisms underlying TP induced and other forms of stimulus bound behavior are discussed. 31 references. (Author abstract)

000443 Rodgers, R. J. Postgraduate School of Studies in Psychology, University of Bradford, Bradford, England **Attenuation of morphine analgesia in rats by intra-amygdaloid injection of dopamine.** Brain Research (Amsterdam). 130(1):156-162, 1977.

To examine the effects of dopamine on morphine analgesia, adult male rats were injected with dopamine hydrochloride in either the caudate putamen or in the corticomedial amygdala following pretreatment with morphine sulphate and behavior on a flinch jump threshold test was observed. Pretreatment with morphine significantly elevated aversive thresholds. Dopamine microinjected into amygdala depressed jump thresholds in control animals and significantly attenuated the elevation in jump thresholds in morphine pretreated animals. Microinjection of dopamine into the caudate putamen did not significantly alter jump thresholds in morphine pretreated animals. Data indicate that dopaminergic stimulation of the corticomedial amygdala produces hyperalgesia which attenuates peripherally induced morphine analgesia. Serotonin has been shown to inhibit electrophysiological activity of amygdaloid cells. Joint findings suggest that this structure may be an important site of interaction between serotonergic inhibitory and dopaminergic facilitatory pain mechanisms. 35 references.

000444 Rodgers, R. J. Postgraduate School of Studies in Psychology, University of Bradford, Bradford, England **Elevation of aversive threshold in rats by intra-amygdaloid injection of morphine sulphate.** Pharmacology Biochemistry and Behavior. 6(4):385-390, 1977.

The effect of intraamygdaloid injection of morphine sulphate in rats was investigated to determine whether the central mediation produced an elevation in the responsiveness to aversive stimulation. Bilateral microinjection of morphine sulfate into the corticomedial amygdala produced a dose dependent increase in aversive threshold. Similar injection into the basolateral amygdala or caudate-putamen failed to have any consistent effect on aversive thresholds. While overall activity levels remained unaffected by morphine injection at either amygadaloid side, caudate injected animals exhibited a significant decrement in total activity in response to both morphine and control injections. The results suggest evidence for an antinociceptive activity of morphine outside classical pain pathways, likely involving dopaminergic mechanisms, and further suggesting that the intraamygdaloid limbic system may function to modulate the intensity of responses to aversive stimulation. 38 references. (Author abstract modified)

000445 Rodriguez-Sierra, Jorge F.; Rosenblatt, Jay S. Institute of Animal Behavior, Rutgers University, Newark, NJ 07102 **Does prolactin play a role in estrogen-induced maternal behavior in rats: apomorphine reduction of prolactin release.** Hormones and Behavior. 9(1):1-7, 1977.

Pregnant rats, ovariectomized and hysterectomized on the sixteenth day, were given estradiol benzoate (EB) to stimulate maternal behavior and apomorphine hydrochloride (APO) to reduce the release of prolactin. Groups received EB + APO, EB + saline, oil + saline, and oil + APO and were tested for maternal behavior starting at 48 hr after surgery and EB or oil treatment. Apomorphine did not prevent short latency maternal behavior in EB treated females, and by itself it had no effect on oil treated females. This supports the conclusion that increased secretion of prolactin is not necessary for estrogen induced maternal behavior; it does not rule out the possibility of an effect of a low level of prolactin secretion. 27 references. (Author abstract)

000446 Sahagian, Dianne E.; Ingle, David J. Wheaton College, Norton, MA 02766 **The effects of amphetamine on maze learning by goldfish.** Psychopharmacology (Berlin). 53(3):319-320, 1977.

The effects of amphetamine on the maze learning ability of goldfish was studied. Goldfish were trained to perform a simple left versus right discrimination in a Y-maze while under the influence of amphetamine. The fish treated with the 1.25mg/l solution of amphetamine reached the learning criterion more quickly than did the controls. Fish treated with a larger dose of amphetamine learned more slowly than either the small dosage group or the control group. The data suggest that amphetamine can facilitate learning in goldfish in a manner comparable to the reported in mammals. 5 references.

000447 Sanders, Barbara; Collins, Allan C.; Petersen, Dennis R.; Fish, Barbara S. Institute for Behavioral Genetics, University of Colorado, Boulder, CO 80309 **Effects of three monoamine oxidase inhibitors on ethanol preference in mice.** Pharmacology Biochemistry and Behavior. 6(3):319-324, 1977.

The effects of pargyline, N-(2-(o-Chlorophenoxy)-ethyl)-cyclopropylamine (Lilly 51641), and nialamide on voluntary ethanol consumption of C57BL/6J mice were investigated. Both pargyline and Lilly 51641 reduced ethanol preference; in contrast, nialamide did not affect preference, despite the fact that it inhibited MAO activity by more than 90%. A subsequent experiment determined that both pargyline and Lilly 51641 produced substantially greater elevations in acetaldehyde levels than did nialamide. It is suggested that increased acetaldehyde is the mechanism responsible for the reduction in ethanol preference observed with pargyline and Lilly 51641. 15 references. (Author abstract)

000448 Schechter, Martin D. Department of Pharmacology, Eastern Virginia Medical School, Norfolk, VA 23507 **Caffeine potentiation of amphetamine: implications for hyperkinesis therapy.** Pharmacology Biochemistry and Behavior. 6(3):359-361, 1977.

A study was undertaken in which caffeine potentiated the effects of amphetamine on rats in a discrimination task, and in which these results were related to the amphetamine treatment of hyperactivity in children. Neither 0.05mg/kg d-amphetamine nor 15mg/kg caffeine alone produce amphetamine like responding in rats trained in two lever operant chambers to discriminate 0.8mg/kg d-amphetamine from saline. The coadministration of the two drug doses produced responding

similar to the 0.8mg/kg d-amphetamine dose. Results of this investigation suggest that caffeine should be subjected to clinical trials, not as a substitute for psychostimulants in the therapy of hyperactivity or minimal brain dysfunction, but in conjunction with reduced dosages of amphetamine. 15 references.

000449 Scheel-Kruger, J.; Golembiowska, K.; Mogilnicka, E. Psychopharmacological Research Laboratory, Dept. E., Sct. Hans Hospital, DK-4000 Roskilde, Denmark **Evidence for increased apomorphine-sensitive dopaminergic effects after acute treatment with morphine.** Psychopharmacology (Berlin). 53(1):55-63, 1977.

Small doses of apomorphine were administered to study the dopaminergic effects in mice and rats pretreated with morphine, and the locomotor effect of the morphine was antagonized. The pretreatment with morphine in increasing doses induced an increasing degree of potentiation of stereotyped behavior induced by high dose of apomorphine (0.5and 2mg/kg s.c.)in the rat. The apomorphine stereotyped biting/gnawing activity was found strongly increased by morphine (10 to 50mg/kg) during the time interval where morphine given alone induced catalepsy. Results indicate that the acute treatment with morphine may induce an increase of apomorphine sensitive dopaminergic mechanisms. 40 references. (Author abstract modified)

000450 Shizgal, P.; Sklar, L. S.; Brown, Z. W.; Amit, Z. Department of Psychology, Concordia University, 1455 de Maisonneuve Blvd. W. Montreal, Quebec H3G 1M8, Canada **Differential motor effects of intraventricular infusion of morphine and etonitazene.** Pharmacology Biochemistry and Behavior. 6(1):17-20, 1977.

The motor effects produced by intraventricular infusions of morphine in rats were compared to the effects of etonitazene. Despite the similarity in the peripheral actions of these drugs, motor effects of central infusions differed dramatically. Intraventricular morphine infusions resulted in explosive motor behavior whereas etonitazene produced extreme muscular rigidity. The periaqueductal grey (PAG) has been proposed as the substrate of morphine induced explosive motor behavior. However, considerations of the dose of morphine and the mobility of this drug in tissue suggest that sites other than the PAG may also be involved in explosive motor behavior. 9 references. (Journal abstract)

000451 Silbergeld, Ellen K.; Pfeiffer, R. F. Experimental Therapeutics Branch, National Institutes of Health, Bethesda, MD 20014 **Differential effects of three dopamine agonists: apomorphine, bromocriptine and lergotrile.** Journal of Neurochemistry (Oxford). 28:1323-1326, 1977.

To explore their mechanisms of actions, bromocriptine and lergotrile, two ergolines, were compared to apomorphine for in vivo effects on behavior and in vitro effects on uptake and release of dopamine by brain minces. Inhibition of dopamine synthesis in vivo significantly interfered with both bromocriptine and lergotrile induced stereotypy, while apomorphine induced stereotypy was not affected. Significant differences among the compounds were also seen neurochemically: bromocriptine inhibited the release of dopamine, while lergotrile increased release. Apomorphine did not affect uptake or release of dopamine. The results, of both behavioral and neurochemical experiments, suggest that two ergolines enhance dopaminergic function by action on presynaptic dopaminergic sites in addition to receptor agonism. 13 references. (Journal abstract modified)

000452 Smith, James B.; McKearney, James W. Worcester Foundation for Experimental Biology, Shrewsbury, MA 01545 **Changes in the rate-increasing effects of d-amphetamine and pentobarbital by response consequences.** Psychopharmacology (Berlin). 53(2):151-157, 1977.

An experiment in two groups of pigeons to determine changes in the rate increasing effects of d-amphetamine and pentobarbital by response consequences is presented. Experimental condition variations such as pauses before a response or suppression of response by punishment were used. It is concluded that rate increasing effects of these drugs are determined not only by predrug patterns of responding but also by effects of reinforcers and punishers during exposure to the drug. 16 references.

000453 Smith, James B.; McKearney, James W. Worcester Foundation for Experimental Biology, 222 Maple Ave., Shrewsbury, MA 01545 **Effects of morphine, methadone, nalorphine and naloxone on responding under schedules of electric shock titration.** Journal of Pharmacology and Experimental Therapeutics. 200(3):508-515, 1977.

The effects of morphine, methadone, nalorphine, and naloxone on squirrel monkey (Saimiri sciureus) responding maintained under an escape titration schedule were studied and these effects were compared with those on responding under a punishment titration schedule. When responding was maintained at moderate rates, all four drugs either increased or had no effect on responding under the escape titration schedule, whereas all four drugs showed decreased response under the punishment schedule. No increases in shock intensity were observed for either schedule under these conditions. When responding was then maintained at a higher control rate under the escape titration schedule, morphine decreased responding at doses which had not affected the lower response rates. Results indicated that titration schedules are not always useful for studying the analgesic effects of drugs, but that specific effects of drugs are determined by specific details under which responding is maintained. 20 references. (Author abstract modified)

000454 Spanis, C. W.; Haycock, J. W.; Handwerker, M. J.; Rose, R. P.; McGaugh, J. L. Dept. of Biology, Univ. of San Diego, San Diego, CA 92110 **Impairment of retention of avoidance responses in rats by posttraining diethyldithiocarbamate.** Psychopharmacology (Berlin). 53(2):213-215, 1977.

To examine the generality of the effects of diethyldithiocarbamate (DDC) on impairment of retention of avoidance responses in rats, posttraining DDC was investigated in a one way active avoidance task and a discriminated active avoidance task. DDC administered immediately after training, impaired rats' retention, 6 days later, of a one way active avoidance task and a discriminated active avoidance task. In the discrimination task a lower dose of DDC also impaired retention. Delayed posttraining injections did not affect retention in either task. The findings indicate that DDC can have similar effects on retention of tasks requiring quite different behavioral responses. 9 references. (Author abstract modified)

000455 Stein, Larry; Belluzzi, James D.; Wise, C. David. Department of Psychiatry, University of Pennsylvania Medical School, Philadelphia, PA 19101 **Benzodiazepines: behavioral and neurochemical mechanisms.** American Journal of Psychiatry. 134(6):665-669, 1977.

Evidence suggesting that benzodiazepines and related tranquilizers may exert their punishment lessening effects at

least in part by a reduction of central serotonin activity is reviewed, and preliminary test results indicating that benzodiazepines may regulate monoamine turnover by a primary action on gamma-aminobutyric acid (GABA) neurons are reported. Anxiety reducing and depressant effects are elucidated in the rat conflict test and further research suggests that depressant actions may be in part mediated by a reduction in noradrenergic activity. The therapeutic effects of benzodiazepines in psychoneurosis may depend in part on their ability to release or disinhibit a patient's anxiety suppressed gratification seeking behavior. Benzodiazepines may disinhibit behavior by reducing the activity of serotonin (and possibly acetylcholine) neurons in the brain's punishment system. Reduction of serotonin transmission may be due to a facilitation of gamma-aminobutyric acid (GABA) mediated presynaptic inhibition at the serotonin nerve terminal. 26 references. (Author abstract modified)

000456 Stevens, J.; Livermore, A. Jr.; Cronan, J. University of Oregon Health Sciences Center, Portland, OR 97201 **Effects of deafening and blindfolding on amphetamine induced stereotypy in the cat.** Physiology & Behavior. 18(5):809-812, 1977.

The effects of specific sensory deprivation on the stereotypic behavior produced by amphetamine was examined in cats with normal hearing and in experimentally deafened animals. Following amphetamine, deaf animals demonstrated eye and head movements which were qualitatively similar to stereotyped behavior in animals with normal hearing. Blindfolding dramatically decreased amphetamine induced head movement stereotypy in cats with normal hearing and in deafened animals. It is concluded that stereotypy induced by threshold doses of amphetamine in the cat is not due to activation of a pure motor automatism but represents release or facilitation of a centrally patterned exploratory program which is maintained by sensory feedback. 14 references. (Author abstract)

000457 Stoff, David M.; Moja, Egidio A.; Gillin, J. Christian; Wyatt, Richard Jed. Laboratory of Clinical Psychopharmacology, IRP, NIMH, St. Elizabeth's Hospital, Washington, DC 20032 **Dose response and time course effects of N,N-dimethyltryptamine on disruption of rat shuttlebox avoidance.** Biological Psychiatry. 12(3):339-346, 1977.

In view of the possible role of N,N-dimethyltryptamine in the etiology of schizophrenia, a study was conducted to develop a reliable behavioral profile of N,N-dimethyltryptamine (DMT) in rats. DMT was given in different doses in a random order to ten rats who were trained to a high, stable, baseline of conditioned avoidance responding in the shuttlebox. DMT produced disruptive effects, increasing doses causing increasing disruption. Disruptive effects were time related, with onset and peak 8 minutes after injection, gradual decline thereafter, and disappearance at about 25 to 30 minutes. It is suggested that both threshold dose and time course for disruptive effects correspond closely to what has been previously reported for DMT's schizophrenic effects in humans. 19 references. (Author abstract modified)

000458 Stripling, Jeffrey S.; Ellinwood, Everett H., Jr. Department of Psychology, University of Arkansas, Fayetteville, AR 72701 **Potentiation of the behavioral and convulsant effects of cocaine by chronic administration in the rat.** Pharmacology Biochemistry and Behavior. 6(5):571-579, 1977.

The effect of chronic administration of cocaine on the behavioral response to the drug was studied in male Sprague-Dawley rats. In the first study, animals received daily injections of saline or various doses of cocaine hydrochloride for 10 da or until one convulsion or three convulsions occurred. Following this treatment, all animals were left untreated for 7 da, after which sensitivity to cocaine was assessed. Animals which had received 40mg/kg cocaine during the initial treatment exhibited a greater behavioral response (stereotyped behavior) than did animals initially treated with saline or 20mg/kg cocaine. Greater sensitivity to the convulsant effect of cocaine during the test series occurred in animals receiving 40mg/kg cocaine initially and in those having one convulsion during the initial administration period. In a second study, animals were injected with either saline or cocaine for 10 da and then tested with a series of daily cocaine injections of increasing dosage after remaining untreated for 4,8, 16, or 32 da. The initial treatment produced augmented behavioral and convulsant effects to cocaine during the subsequent test series. The sensitization to the convulsant effect of the drug was significant at all intervals while the duration of sensitization to the behavioral effects of the drug could not be determined due to apparent age related changes in the response of the control animals to cocaine. The response potentiation which was observed is attributed to the effects of cocaine per se rather than to convulsions produced by the drug. 47 references. (Author abstract modified)

000459 Thompson, Donald M. Dept. of Pharmacology, Georgetown Univ. Schools of Medicine and Dentistry, Washington, DC 20007 **Development of tolerance to the disruptive affects of cocaine on repeated acquisition and performance of response sequences.** Journal of Pharmacology and Experimental Therapeutics. 203(2):294-302, 1977.

In an investigation of the development of tolerance to the disruptive effects of cocaine on repeated acquisition and performance of response sequences, pigeons obtained food by making four responses on three keys in a specified sequence. Errors produced 5 second timeout periods, during which the keylights were off and responses had no effect. To establish a baseline of repeated acquisition, the sequence of correct responses was changed from session to session. Results indicate that cocaine (3mg/kg) disrupted behavior and resulted in an increase in total errors and the relative frequency of perseverative errors, while the rate of within session error reduction (learning) decreased and the total trial time (pausing) increased. Tolerance developed during repeat administration, but did not develop to cocaine induced increases or decreases in timeout responding. Such effects were seen as nondisruptive in the sense that they did not reduce the rate of food reinforcement. For comparison, cocaine was also studied under a performance condition, in which the sequence of correct responses was the same from session to session. Results indicate that cocaine increased performance errors and produced pausing, but tolerance developed quicker than under the learning condition. It is concluded that the more rapid development of tolerance was due to the stronger stimulus control of behavior under the performance condition. 23 references. (Author abstract modified)

000460 Thompson, Richard W.; Scuderi, Robert; Boren, James. Dept. of Psychology, Western Washington State College, Bellingham, WA 98225 **The effect of epinephrine on tonic immobility (animal hypnosis) in chickens.** Bulletin of the Psychonomic Society. 9(6):409-410, 1977.

To establish a dose response relationship between epinephrine and tonic immobility (TI) in chickens, six groups of 10 cockerel chicks were given no injection, IP injection with saline, or injection with .125, .25, .5, or 1.0mg/kg of

epinephrine prior to three tests for duration of TI. Results indicate that TI was an increasing function of epinephrine dosage. It is concluded that the data provide support for the fear hypotheses for TI. 2 references. (Author abstract modified)

000461 Tilson, Hugh A.; Chamberlain, John H.; Gylys, Jonas A. Nat. Inst. of Environmental Health Sciences, P.O. Box 12233, Research Triangle Park, NC 27709 **Further studies on BL-3912A: effects on avoidance behavior of rats with low baselines and on reaction thresholds to electric footshock.** Pharmacology Biochemistry and Behavior. 6(6):627-630, 1977.

The effects of BL-3912A, a phenylalkylamine, on avoidance behavior and reaction threshold to footshock in rats was investigated. Rats selected for their low performance baselines in an active avoidance shuttlebox task were given various doses of BL-3912A, S-amphetamine or piracetam. BL-3912A at 1mg/kg had no significant behavioral effects, while 5 and 10mg/kg significantly increased the number of avoidance responses without affecting responses during the intertrial interval (ITI). Statistically reliable effects on behavior were not observed following 20mg/kg of BL-3912A. S-Amphetamine at 0.5and 1mg/kg also facilitated avoidance responding, but could be differentiated from BL-3912A in that the S-amphetamine significantly increased shuttles during the ITI. BL-3912A at 10 and 20mg/kg IP had no significant effect on reaction thresholds. It was concluded that BL-3912A facilitated shuttlebox avoidance responding of rats with low performance baselines. Behavioral facilitation occurred without concomitant increases in noncontingent activity or apparent changes in reactivity to electric footshock. 11 references. (Journal abstract modified)

000462 Traversa, U.; de Angelis, L.; Vertua, R. Institute of Pharmacology, University of Triesta, Via Valerio 32, 1-34100 Trieste, Italy **On the hypnogenic and anticonvulsant activities of demethyldiazepam and chlordemethyldiazepam: time-effect relations.** Journal of Pharmacy and Pharmacology (London). 29(8):504-506, 1977.

The marked sleep inducing and anticonvulsant activities in mice of demethyldiazepam (DMDZ), a metabolic product of chlordiazepoxide, diazepam, chlorazepate, medazepam, prazepam, and pinazepam, and chlordemethyldiazepam (C1 DMDZ), a metabolic precursor of lorazepam, are confirmed, and the time effect relations of these two compounds are established. C1 DMDZ was found to be much more effective than the parent compound which is in agreement with the results of preliminary clinical trials that have investigated the effectiveness of C1 DMDZ. 15 references.

000463 Trulson, Michael E. Department of Psychology, Princeton University, Princeton, NJ 08540 **Role of glucocorticoids in an abnormal grooming behavior in cats with pontile or frontal neocortical lesions.** Journal of Comparative and Physiological Psychology. 91(4):761-769, 1977.

The effects of glucocorticoid administration on abnormal grooming behavior in cats with pontile or frontal neocortical lesions were investigated with 78 cats. Systematic administration of glucocorticoids abolished abnormal grooming behavior even when the stimulatory effect on serotonin metabolism was blocked by administration of p-chlorophenylalanine (PCPA). Microinjections of glucocorticoids into the superior colliculi also significantly decreased abnormal grooming behavior. Adrenalectomized cats did not display the behavior, but it did occur in PCPA treated adrenalectomized cats. Administration of either glucocorticoids or 5-hydroxytrytophan abolished the behavior in PCPA treated adrenalectomized cats. Conclusion is that pontile and frontal neocortical lesions produce deficits in both glucocorticoids and serotonin, and that these deficits are necessary and sufficient conditions for inducing the abnormal grooming behavior. 31 references. (Author abstract modified)

000464 Tye, N. C. Psychological Laboratory, University of Cambridge, Cambridge, England **Neurotransmitters and response suppression.** Brain Research (Amsterdam). 127(2):377, 1977.

The role of neurotransmitters in response suppression in the rat was discussed in a paper presented at the 8th Annual Meeting of the European Brain and Behaviour Society in Copenhagen, Ausust, 1976. Selective damage to forebrain serotonin (5-HT) pathways was achieved by injection of 5,7-dihydroxytryptamine (5,7-DHT) into the ventromedian tegmentum. Rats treated in this way did not show suppression of responding to shock when trained on multiple VI food/TO/VI food + shock schedule. The release of suppression seen after 5,7-DHT lesion mimics the effects of benzodiazepines on this schedule. By contrast, selective 6-hydroxydopamine lesions to the dorsal noradrenergic (NA) pathway produced only a transient impairment in suppression to shock. However, forebrain NA loss was associated with a generalized difficulty in suppressing responding to nonreward, i.e.,in extinction paradigms. This demonstration suggests that 5-HT and NA are involved in different forms of response suppression. (Author abstract modified)

000465 van Riezen, H.; Rigter, H.; de Wied, D. Pharmacology Department, University of Utrecht, Utrecht, Netherlands **Possible significance of ACTH fragments for human mental performance.** Behavioral Biology. 20(3):311-324, 1977.

Evidence that adrenocorticotropic hormone (ACTH) has an effect on behavior that is independent of its effects on the adrenals is reviewed, and possible significance of ACTH fragments for human mental behavior is examined. Results of experiments with rats indicate that ACTH4-10 and other fragments or analogs that are devoid of endocrine effects have an effect on acquisition and delay extinction of conditioned behavior. ACTH4-10 has a facilitating effect on retrieval from memory. This is shown to be independent of the type of test design used to evaluate retrieval. It is suggested that ACTH activates the reticulolimbic circuits, which may result in increased motivation or attention. The results of the first studies of ACTH4-10 (Org OI 63) in man are discussed and interpreted to indicate that ACTH4-10 probably improves attentional processes, including retrieval functions, and that further evaluation of ACTH like peptides is justified. 70 references. (Author abstract modified)

000466 van Riezen, H.; Schnieden, H.; Wren. Allison F. Scientific Development Group, Organon NV, Oss, The Netherlands **Olfactory bulb ablation in the rat: behavioural changes and their reversal by antidepressant drugs.** British Journal of Pharmacology (London). 60(4):521-528, 1977.

The effects of bilateral olfactory bulbectomy, sham operation and inducement of peripheral anosmia were studied on locomotor activity, passive avoidance acquisition and irritability in rats. Bulbectomized rats were hyperactive, deficient at learning a step down passive avoidance response and hyperirritable. Peripheral anosmia, induced by intranasal infusion of $ZnSO_4$ solution resulted in no behavioral changes. Chronic pretreatment with amitriptyline and a tetracyclic antidepressant mianserin reversed the hyperactivity and reduced the learning deficit of bulbectomized rats. These drugs had no sig-

nificant effects on sham operated animals. Neither amitriptyline nor mianserin reduced the exaggerated responses of bulbectomized rats to external stimuli. (+)-Amphetamine accelerated the acquisition of the passive avoidance response, greatly enhanced the locomotor activity and slightly increased the irritability socre of both sham operated and bulbectomized rats. Chlorpromazine and chlordiazepoxide significantly reduced the acquisition, locomotor activity and irritability of experimental and control rats. Lithium sulphate had no effect on activity or irritability but produced a small impairment in acquisition of bulbectomized rats. It is concluded that the reversal by antidepressant drugs of the behavioral syndrome seen after olfactory bulb ablation could constitute a new model for the detection of this group of centrally acting compounds. 31 references. (Author abstract)

000467 Vitiello, Michael V.; Woods, Stephen C. Department of Psychology, NI-25, University of Washington, Seattle, WA 98195 **Evidence for withdrawal from caffeine by rats.** Pharmacology Biochemistry and Behavior. 6(5):553-555, 1977.

The possible development of physical dependence to caffeine was studied in rats. Rats given an injection of caffeine after consuming water in a daily drinking session received an injection that did not contain caffeine after consuming a novel flavor (saacharin). The animals which had received large daily injections of caffeine subsequently avoided the novel flavor. It is suggested that the mechanism for this avoidance is physiological withdrawal resulting from the absence of caffeine. 22 references.

000468 Wallach, Marshall B.; Dawber, Mark; McMahon, Margaret; Rogers, Charlotte. Department of Pharmacology, Syntex Research, 3401 Hillview Avenue, Palo Alto, CA 94304 **A new anorexigen assay: stress-induced hyperphagia in rats.** Pharmacology Biochemistry and Behavior. 6(5):529-531, 1977.

The use of physical stress (tail pinch) induced hyperphagia in rats as a screening test for anorexigenic compounds is described. Consumption of sweetened condensed milk by naive rats was measured during the stress. The hyperphagia was prevented by pretreatment with dextroamphetamine, chlorphentermine, diethylpropion, fenfluramine, methamphetamine, morphine, chlorpromazine, and haloperidol. The benzodiazepines chlordiazepoxide and diazepam increased the hyperphagia. The relevance of dopaminergic agonistic and antagonist activities to anorexigenic activity is questioned. 6 references. (Author abstract modified)

000469 Walters, James K. Yale University School of Medicine, 34 Park Street, New Haven, CT 06508 **Effects of PCPA on the consumption of alcohol, water and other solutions.** Pharmacology Biochemistry and Behavior. 6(4):377-383, 1977.

The influence of para-chlorophenylalanine (PCPA) on the preference by rats for alcohol, saccharin, glucose, and sodium chloride solutions and on water intake was studied. Ten daily intragastric doses of PCPA were found to reduce alcohol preference both during and after PCPA treatment. Administration of daily doses of 5-hydroxytryptophan plus a peripheral decarboxylase inhibitor, failed to reverse the PCPA induced suppression in the post-PCPA test. Alcohol preference was not reduced below baseline following PCPA if it was administered between preference tests rather than coincident with alcohol drinking. Preferences for saccharin, glucose, and sodium chloride solutions were all affected by PCPA with significant decreases in consumption below baseline but total fluid intake significantly increased. Large increases in water intake were produced by PCPA orally. These results suggest that alcohol preference, in studies where PCPA treatment and alcohol drinking occur concurrently, may be considerably influenced by learned aversions to alcohol. 22 references. (Author abstract)

000470 Wayner, M. J.; Merkel, A. D.; Jolicoeur, F. B. Brain Research Lab., Syracuse University, 601 University Avenue, Syracuse, NY 13210 **Effects of angiotensin II on schedule dependent and induced behavior at recovered body weight.** Pharmacology Biochemistry and Behavior. 6(6):701-704, 1977.

The effects of four doses of angiotensin II, 0.4, 0.8, 1.2and 1.6mg/kg, injected subcutaneously on schedule dependent lever pressing and schedule induced drinking and licking were studied in rats who had recovered bodyweight under ad lib eating conditions. Prior to this experiment rats had been maintained at 80% bodyweight and were tested under the usual conditions producing schedule induced drinking. Animals were then returned to the home cage and allowed to recover bodyweight. Results were analyzed for both the first 15 min of the 1 hr session and for the total 1 hr session. Data indicate that all four doses decreased lever pressing during the first 15 min and for the total 1 hr session. The three highest doses produced increased licking during the first 15 min. Only the highest dose augmented licking throughout the total 1 hr session. Water intakes were significantly increased by the three highest doses only during the first 15 min of the session. Peripheral effects of angiotensin II are discussed and a central pharmacological action on drinking was suggested. 2 references. (Journal abstract)

000471 White, Brent C.; Tapp, Walter N. Centre College of Kentucky, Danville, KY 40422 **Unilateral catecholamine depletion of the corpus striatum and amphetamine-induced turning: an ontogenetic study.** Psychopharmacology (Berlin). 53(2):211-212, 1977.

The effect of unilateral catecholamine depletion of the corpus striatum on turning behavior in rats is evaluated from an ontogenetic viewpoint. Unilateral intrastriatal microinjections of alpha-methyl-p-tyrosine followed by systemic amphetamine treatment produced turning ipsilateral to the side of the injection in rats from 12 days of age to maturity, but not in rats younger than 12 days. These results are consistent with other findings that indicate rapid development of the striatal dopaminergic system and dopaminergic component of the amphetamine stereotypy in the second postnatal week. 9 references. (Author abstract modified)

000472 Wiegant, V. M.; Gispen, W. H. Div. of Molecular Neurobiology, Rudolf Magnus Institute for Pharmacology, Utrecht, The Netherlands **ACTH-induced excessive grooming in the rat: latent activity of ACTH4-10.** Behavioral Biology. 19(4):554-558, 1977.

To examine the grooming induction potencies of short peptides sharing sequences with adrenocorticotropic hormone (ACTH) 4-10, e.g. those sharing the sequence H-MET-GLU-His-Phe-Arg-Trp-Gly-OH, rats were intraventricularly injected with a synthetic peptide solution and behaviors were observed and recorded. Although ACTH4-10 itself is inactive, ACTh4-7 and (D-Phe7)ACTH4-10 are capable of inducing excessive grooming behavior. From the effectiveness of a variety of other oligopeptides within the ACTH4-10 sequence, it was concluded that ACTH4-7 is the shortest sequence to induce this behavioral response as was found in studies on the effect of these peptides on the maintenance of a conditioned avoidance response. The present data underscore the need for

detailed information on the configuration of peptides at the CNS receptor site. 15 references. (Author abstract modified)

000473 Winter, J. C. Dept. of Pharmacology & Therapeutics, School of Medicine, 127 Farber Hall, SUNY, Buffalo, NY 14214 **Morphine and ethanol as discriminative stimuli: absence of antagonism by p-chlorophenylalanine methyl ester, cinanserin, or BC-105.** Psychopharmacology (Berlin). 53(2):159-163, 1977.

An investigation to determine whether discriminated responding mediated by morphine and ethanol is affected by p-chlorophenylalanine methyl ester (p-CPA) an inhibitor of the synthesis of 5-hydroxytryptamine (5-HT), and by antagonists of 5-HT is presented. The blocking agents employed were cinanserin, in ethanol trained subjects, and BC-105, in morphine trained rats. No evidence of antagonism was obtained with either BC-105 or cinanserin. Results with p-CPA were variable but no consistent or statistically significant reduction in the efficacy of morphine or ethanol as discriminative stimuli was observed. 21 references. (Journal abstract modified)

000474 Woodruff, Michael L.; Isaacson, Robert L. Department of Psychology, Middlebury College, Middlebury, VT 05753 **Attenuation of the rate-decreasing effects of amphetamine on fixed-ratio responding in rats by hippocampal lesions.** Behavioral Biology. 20(4):493-499, 1977.

To clarify the effects of hippocampal lesions plus amphetamine on fixed-ratio (FR) operant performance, food deprived rats (n=15) were trained to bar press for a food reinforcement on an FR6 schedule. After training, some received bilateral hippocampal lesions, some received bilateral cortical lesions, and some remained intact. Following postoperative recovery all rats were again food deprived and returned to the FR6 schedule. Four doses of dl-amphetamine (0.1, 0.5, 1.0, and 1.5mg/kg) were given, in ascending and descending orders with 1 week between each drug administration. Intact controls and controls with cortical damage demonstrated decreased response rates after the 1.0and 1.5mg/kg doses, whereas the hippocampectomized rats were much less affected. These results indicate that hippocampal destruction may cause a reduced reaction to amphetamine under the procedures used in this study, but it is suggested that the effect of the hippocampal lesion on amphetamine induced behaviors may be predicted from the effect of the drug on the behavior of intact animals. 15 references. (Author abstract modified)

000475 Zarevics, Peter; Weidley, Edwin; Setler, Paulette. Smith Kline & French Laboratories, Philadelphia, PA 19101 **Blockade of intracranial self-stimulation by antipsychotic drugs: failure to correlate with central alpha-noradrenergic blockade.** Psychopharmacology (Berlin). 53(3):283-288, 1977.

The involvement of central alpha-noradrenergic receptors in intracranial self-stimulation (ICSS) was studied. Dose response curves were established for the blockade of ICSS by the antipsychotic drugs chlorpromazine, thioridazine, clozapine, and pimozide and the alpha-antagonist phenoxybenzamine. Antagonism of the facilitation, produced by the central alpha-agonist clonidine, of flexor withdrawal reflexes in the reserpinized spinal rat was used to assess the central alpha-blocking potency of the same drugs, and dose response curves were established. No correlation was found between central alpha-blockade, as reflected by the ED50 for blockade of clonidine facilitated spinal reflexes, and the ED50 for blockade of ICSS. Pimozide blocked ICSS at doses virtually devoid of central alpha-blocking activity, while phenoxybenzamine was a potent alpha-antagonist and a weak blocker of ICSS. The lack of correlation between central alpha-blockade and decreased ICSS suggests that alpha-receptors are not critically involved in self-stimulation behavior. 38 references. (Author abstract)

05 TOXICOLOGY AND SIDE EFFECTS

000476 Ames, Matthew M.; Nelson, Sidney, D.; Lovenberg, Walter; Sasame, Henry A. Dept. of Oncology, Mayo Clinic, Rochester, MN 55901 **Metabolic activation of para-chloroamphetamine to a chemically reactive metabolite.** Communications in Psychopharmacology. 1(5):455-460, 1977.

To determine the long-term neurotoxicity of para-chloroamphetamine, formation of a chemically reactive intermediate was investigated by determining the covalent binding of radioactive para-chloroamphetamine to microsomal proteins in rats. Binding was observed after incubation of the drug with rat liver microsome preparations. Binding was inhibited by the use of boiled microsomes, the absence of NADPH or oxygen, or the presence of carbon monoxide. It is suggested that the brain neurotoxicity may be related to the formation of a chemically reactive metabolite. 15 references. (Author abstract modified)

000477 Asbach, H. W.; Holz, F.; Mohring, K.; Schuler, H. W. Department of Urology, Surgical Center, University of Heidelberg, Medical School, Heidelberg, Germany **Lipid hemodialysis versus charcoal hemoperfusion in imipramine poisoning.** Clinical Toxicology. 11(2):211-219, 1977.

To compare the in vitro elimination capacity of lipid hemodialysis for tricyclic antidepressants with that of charcoal hemoperfusion and to determine the in vivo therapeutic efficacy of hemodialysis in tricyclic poisoning, a series of studies in animals using labelled imipramine as a reference substance was undertaken. Results indicate that in vitro elimination of imipramine by lipid dialysis and by charcoal hemoperfusion is equally good (95% and 90% elimination respectively). Results of in vivo hemodialysis indicate a substantial removal of the imipramine dose with imipramine blood levels remaining constant, suggesting the occurrence of a continuous shift from storage compartments to the blood. Results taken in conjunction with previous clinical data indicate that hemodialysis with the Hollow Fiber Artificial Kidney using a lipid containing dialysate offers an active elimination procedure in cases of severe tricyclic poisoning which may also offer the advantage of correcting metabolic disturbances accompanying severe intoxication. 7 references.

000478 Bianchetti, G.; Bonaccorsi, Aurora; Chiodaroli, A.; Franco, R.; Garattini, S.; Gomeni, R.; Morselli, P. L. E.R.S. Synthelabo, 58 rue de la Glaciere, Paris, France **Plasma concentrations and cardiotoxic effects of desipramine and protriptyline in the rat.** British Journal of Pharmacology (London). 60(1):11-19, 1977.

Correlations between the plasma concentrations and the cardiotoxic effects of desipramine and protriptyline were studied in rats. Two consecutive intravenous infusions of each drug were administered to anesthetized rats to obtain a peak level (first infusion) followed by lower steady state concentrations (second infusion). Increasing infusion rates produced proportional increases in the atrium/plasma ratios of the drugs (57/21 for desipramine; 43/11 for protriptyline) according to the time of determination during the infusions. Positive chronotropic effects occurred at plasma concentrations of up to 0.1mcmg/ml for desipramine and up to 1.2mcmg/ml for protriptyline. At higher plasma concentrations, both drugs produced bradycardia. Both drugs produced right rotation of the electrical axis of

the heart. The intensity of this effect was directly related to the drug plasma concentrations. Atrioventricular conduction was impaired at plasma concentrations of both drugs (2.2mcmg/ml for desipramine; 3.6mcmg/ml for protriptyline) which are higher than the therapeutic plasma levels. It is concluded that desipramine is more cardiotoxic than protriptyline. It is suggested that they may be due to differences in accumulation in heart tissue at steady state plasma levels as well as to differences in accumulation in intrinsic activity. It is also suggested that this experimental model may be of value in exploring the cardiotoxicity of other tricyclic antidepressants and for studying factors which may affect the cardiotoxicity of these drugs. 38 references. (Author abstract modified)

000479 Bonaccorsi, Aurora; Franco, R.; Garattini, S.; Morselli, P. L.; Pita, E. Istituto di Ricerche Farmacologiche Mario Negri, Via Eritrea 62, 20157 Milano, Italy **Plasma nortriptyline and cardiac responses in young and old rats.** British Journal of Pharmacology (London). 60(1):21-27, 1977.

The relationship between plasma concentrations, cardiac effects of nortriptyline, and age was investigated in anesthetized young (7-week-old) and old (2-year-old) rats. The drug was administered by two consecutive intravenous infusions which resulted in a peak plasma concentration followed by steady state plasma levels. Increasing infusion rates produced proportional increases in drug plasma concentrations ranging from 0.15mcmg/ml to 6.0mcmg/ml. In the young rats, nortriptyline produced an increase in heartrate, a right rotation of the electrical axis, and a prolongation of the PQ interval in the electrocardiogram. Heartrate changes were not correlated with drug plasma levels, but the other two parameters were significantly related to nortriptyline plasma levels. Arrhythmias occurred at concentrations higher than 5.2mcmg/ml. In old rats, nortriptyline caused more severe cardiac effects than in young animals. Plasma concentrations of the drug in old rats were two to five times higher than those found in young rats at similar infusion rates. It is suggested that a higher concentration of the drug at its sites of action may be responsible for the more severe cardiotoxicity of nortriptyline in old rats; moreover, there may be a relationship between age in human subjects and increased sensitivity to the cardiotoxic effects of tricyclic antidepressants. 23 references. (Author abstract modified)

000480 Catravas, John D.; Waters, I. W.; Hickenbottom, John P.; Davis, W. Marvin. Department of Pharmacology, School of Pharmacy, University of Mississippi, University, MS 38677 **The effects of haloperidol, chlorpromazine and propranolol on acute amphetamine poisoning in the conscious dog.** Journal of Pharmacology and Experimental Therapeutics. 202(1):230-243, 1977.

To determine the physiological effects of amphetamine poisoning, and to assess the antidotal value of haloperidol, chlorpromazine, and propranolol on acute amphetamine poisoning, lethal doses of d-amphetamine sulfate were administered intravenously to conscious mongrel dogs and six periods of toxicity were observed. Amphetamine produced increases in body temperature, systemic arterial systolic and diastolic pressures, left ventricular pressure, heartrate, cardiac output, total peripheral resistance, oxygen uptake, tidal volume, minute volume, blood lactate, plasma urea nitrogen and plasma glutamic oxaloacetic transaminase, but a decrease in plasma glucose. The mean survival time was 2 hours (range: 0.7to 2.7hours). The lethal actions of d-amphetamine were challenged in three other groups of conscious dogs by the intravenous administration of either 1mg/kg of haloperidol, 0.5or 6.0mg/kg of propranolol or 10 or 18mg/kg of chlorpromazine at the beginning of period II. All dogs treated with haloperidol or chlorpromazine showed an early return of most physiological variables to control levels and survived through a 48 hour observation period. Propranolol provided no appreciable protection against the toxic effects of d-amphetamine and did not change the mean survival time after amphetamine administration. The results demonstrate a definite protective role against d-amphetamine lethality for posttreatment with haloperidol or chlorpromazine. 54 references. (Author abstract)

000481 Lerner, Pauline; Nose, Peter; Gordon, Edna K.; Lovenberg, Walter. Section on Biochemical Pharmacology, National Heart, Lung, and Blood Institute, Bethesda, MD 20014 **Haloperidol: effect of long-term treatment on rat striatal dopamine synthesis and turnover.** Science. 197(4299):181-183, 1977.

The tyrosine hydroxylase activity in male Sprague-Dawley rats subjected to long-term treatment with the neuroleptic drug, haloperidol, was studied to determine the effect of this treatment on striatal dopamine synthesis and turnover. Short-term treatment with haloperidol caused a kinetic activation of striatal tyrosine hydroxylase. Long-term treatment caused a prompt activation of the enzyme which was followed by a delayed, compensatory deactivation below control levels. Tolerance was seen as developing to the stimulating effect of haloperidol on striatal dopamine turnover. Implications of neuroleptic drug use in treatment of psychiatric patients was discussed, and the data support previous research demonstrating tolerance in rats to the behavioral and biochemical effects of neuroleptics used on a long-term basis. 17 references. (Author abstract modified)

000482 Moisset, Beatriz. Jackson Laboratory, Bar Harbor, ME 04609 **Genetic analysis of the behavioral response to d-amphetamine in mice.** Psychopharmacology (Berlin). 52(3):263-267, 1977.

The ambulatory and rearing responses to d-amphetamine were studied in a battery of recombinant inbred strains and in three closely related strains of mice. A mutation at the genetic locus that affects the response to d-amphetamine seems to have taken place. Strain differences in the decrease of rearing behavior produced by the drug were observed in recombinant inbred strains. Although the genetic analysis is not conclusive, it appears to be compatible with regulation by a single major gene. The two single gene models reported here (one affecting the stimulatory response and the other the inhibitory response to d-amphetamine) may be useful in the study of neural mechanisms involved in stimulation and inhibition of behavior by d-amphetamine. 11 references. (Author abstract modified)

000483 Peters, Marvin A. Dept. of Pharmacology, Loma Linda Univ., Loma Linda, CA 92354 **The effect of maternally administered methadone on brain development in the offspring.** Journal of Pharmacology and Experimental Therapeutics. 203(2):340-346, 1977.

To investigate the effect of maternally administered methadone on brain development in the offspring, methadone was administered to female rats before, during, and after gestation. Findings indicate that chronic methadone administration resulted in a delay or deficiency in brain development in offspring compared with offspring of control rats, which was most noticeable as a decrease in protein and RNA content. A comparison of the RNA/DNA and RNA/protein ratios suggests that the primary cause of the deficiency was associated with the RNA synthesis. Preliminary behavioral studies show a

significant decrease in ability of offspring of treated females to respond to a conditioning stimulus to avoid an electric shock. Even though analysis and behavioral testing are seen to suggest that minimal brain deficiencies lasting weeks to months do occur. 12 references. (Author abstract modified)

000484 Roth-Schechter, B. F.; Laluet, M.; Tholey, G.; Mandel, P. Centre de Neurochimie du CNRS, 11 Rue Humann, 67085 Strasbourg Cedex, France **The effect of pentobarbital on the carbohydrate metabolism of glial cells in culture.** Biochemical Pharmacology (Oxford). 26(14):1307-1313, 1977.

The effects of long-term exposure to pentobarbital on the carbohydrate metabolism of glial cells in culture were studied. Hamster astroblast glial cells and dissociated glial cells from newborn rat brains in primary culture were exposed to pentobarbital-Na and morphine hydrochloride. After various periods of time the following enzymatic activities were measured in cell culture: fructose-diphosphate-aldolase, pyruvate kinase (PK), lactate dehydrogenase (LDH), glutamate dehydrogenase (GDH), malate dehydrogenase (MDH), and NADH cytochrome c reductase (CCR). The long-term exposure to pentobarbital resulted in increases in LDH, MDH, and GDH activities and a consistent decrease in PK activity. Continuous exposure to morphine resulted in minor, uniformly depressive changes. When neuroblastoma cells or rat fibroblasts in primary culture were exposed to pentobarbital no specific changes could be detected. Results are interpreted as suggesting that barbiturates affect the carbohydrate metabolism of glial cells in a drug dependent and cell dependent fashion. 14 references. (Author abstract modified)

000485 Samples, John R.; Janowsky, David S.; Pechnick, Robert; Judd, Lewis L. Department of Psychiatry, University Hospital, 225 W. Dickinson Street, San Diego, CA 92103 **Lethal effects of physostigmine plus lithium in rats.** Psychopharmacology (Berlin). 2(3):307-309, 1977.

The lethal interaction between the reversible cholinesterase inhibitor, physostigmine, and lithium chloride was studied in rats. A combination of lithium plus physotigmine increased lethality more than that caused by either physostigmine or lithium alone. Scopolamine completely reversed this effect. These drug interactions may have clinical significance, since lithium plus cholinesterase inhibitors may be used together in the practice of medicine. 11 references. (Author abstract modified)

000486 Sherry, C. J. Department of Biology, College of Science, Texas A & M University, College Station, TX 77843 **Chlorpromazine: a potential physiological teratogen.** Experientia (Basel). 33(4):493-494, 1977.

Teratogenic effects of chlorpromazine on chick embryos were investigated. When administered prenatally to chick embryos, it was associated postnatally with a curled toe anomaly. The 50% effective dose for curled toe is 88 microg/egg as determined by exact probit method. Chlorpromazine also caused long-term alterations in behavior. Since the chicks in this study demonstrated behavioral, as well as a potential neurological anomaly, it is suggested the administration of chlorpromazine to human females of childbearing age, and in particular as an antiemetic during the critical first trimester of pregnancy be reconsidered. 36 references. (Journal abstract modified)

000487 Simpson, Lance L. Department of Pharmacology, College of Physicians and Surgeons, 630 West 168th Street, New York, NY 10032 **The effects of behaviorally relevant doses of chlorpromazine and molindone on cardiac adenylate cyclase and on myocardial contractility.** Biochemical Pharmacology (Oxford). 26(14):1315-1319, 1977.

Behaviorally relevant doses of chlorpromazine and molindone were tested for their abilities to inhibit cardiac adenylate cyclase and their effects on myocardial contractility. Pretreatment with rats either acutely or chronically with either chlorpromazine or molindone (10mg/kg) did not alter basal levels of cardiac adenylate cyclase. In vitro, both drugs inhibited the enzyme at certain concentrations, below which neither drug appreciably inhibited basal levels or beta-agonist induced changes in cardiac adenylate cyclase. In related experiments, pithed rats were treated with various doses of chlorpromazine or molindone, and neither drug, at behaviorally relevant doses, depressed cardiac contractility or inhibited beta-agonist induced changes in contractility. At toxic doses, both doses tended to depress contractility. 19 references. (Author abstract modified)

000488 Smith, D. F.; Shimizu, M.; Schou, M. Psychopharmacology Research Unit, Psychiatric Hospital, DK-8240 Risskov, Denmark **Lithium absorption, distribution and clearance and body temperature in rats given lithium plus haloperidol.** Pharmacology (Basel). 15(4):337-340, 1977.

To determine if haloperidol might affect lithium accumulation and elimination thus increasing the risk of lithium neurotoxicity, renal lithium clearance, tissue lithium levels, serum lithium concentration, and body temperature were determined in rats given lithium alone or combined with haloperidol. A slight increase in serum lithium concentration occurred in one of the three groups given lithium plus haloperidol. Haloperidol failed to affect renal lithium clearance, tissue lithium levels and body temperature. The data do not support the hypothesis that haloperidol exerts an action on lithium pharmacokinetics. 8 references. (Author abstract modified)

000489 Sundaresan, Pavur R.; Rivera-Calimlim, Leonor. Department of Pharmacology and Toxicology, University of Rochester, School of Medicine and Dentistry, Rochester, NY 14642 **Effect of chlorpromazine on L-methionine transport in the rat intestine.** Biochemical Pharmacology (Oxford). 26(15):1411-1415, 1977.

The inhibitory effect of chlorpromazine on L-methionine transport was studied in the everted sac preparation of the rat intestine. Chlorpromazine inhibits only the sodium dependent active component of L-methionine transport, without affecting the sodium independent diffusion component. Inhibition of methionine transport by chlorpromazine is time dependent and concentration dependent. Half maximal inhibition was observed at 5.2x 10 to the minus 4 M chlorpromazine in the medium. No significant metabolism of chlorpromazine was observed during the experiment, suggesting that the unchanged chlorpromazine was the active inhibitor. Studies on a few chlorpromazine metabolites showed that demethylation in the aminopropyl side chain or ring hydroxylation at the 7 position in the chlorpromazine molecule did not affect the inhibitory activity on methionine transport, while oxidation at the sulfur atom completely abolished it. (Author abstract)

000490 Weiss, Bernard; Santelli, Shirley; Lusink, George. Dept. of Radiation, Biology and Biophysics, University of Rochester, Medical Center, Rochester, NY 14642 **Movement disorders induced in monkeys by chronic haloperidol treatment.** Psychopharmacology (Berlin). 53(3):289-293, 1977.

After several months of treatment, Cebus apella, Cebus albifrons, and Saimiri sciurea monkeys maintained on haloperidol, in doses of 0.5or 1.0mg/kg orally 5 days per week, began to display severe movement disorders, typically 1 6 h postdrug. Cebus monkeys exhibited violent, uncontrolled movements that flung the animals about the cage. Such episodes usually lasted only a few minutes, recurring several times during the period following drug ingestion. Writhing and bizarre postures dominated the response in S. sciurea. Cessation of drug treatment produced no distinctive aftereffects. When tested as long as 508 days after the last administration, however, Cebus monkeys responded to haloperidol with several episodes of hyperkinesis, even at challenge doses considerably lower than those in the original treatment. It is suggested that although haloperidol has been implicated in relatively few cases of tardive dyskinesia, the use of higher and higher doses in human subjects may increase the number of cases of clinically observed haloperidol induced dyskinesias. 17 references. (Author abstract modified)

000491 Zagon, Ian S.; McLaughlin, Patricia J. Department of Anatomy, Milton S. Hershey Medical Center, Pennsylvania State University, Hershey, PA 17033 **Effects of chronic morphine administration on pregnant rats and their offspring.** Pharmacology (Basel). 15(4):302-310, 1977.

The effect of chronic maternal morphine exposure on conception, pregnancy, and perinatal development was studied in rat. Beginning 5 days prior to mating and continuing through gestation and lactation, female Sprague-Dawley albino rats received twice daily intraperitoneal (i.p.)injections of morphine sulfate; drug dosages were gradually increased from 10mg/kg/injection to a maintenance level of 40mg/kg/injection. Throughout gestation, drug treated mothers weighed less than saline injected controls. Control females displayed progressive weight loss during lactation; morphine injected females showed marked weight gain in the 2nd and 3rd weeks of this period. Morphine administered during pregnancy produced decreased litter size, increased number of stillborns, increased infant mortality, and retardation of body growth in drug exposed offspring. Weight deficits persisted in young rats observed 5 1/2 weeks after cessation of drug exposure as well as in animals continuing to receive twice daily i.p. injections of 20mg/kg. 13 references. (Author abstract)

06 METHODS DEVELOPMENT

000492 Bittiger, H.; Heid, J. Pharmaceutical Division, CIBA-GEIGY, CH-4000 Basel, Switzerland **The subcellular distribution of particle-bound negative charges in rat brain.** Experientia (Basel). 33(6):812, 1977.

In a paper presented at the 9th annual meeting of the Union of Swiss Societies of Experimental Biology in Zurich, April 1977, the use of ferritin cationized with Gerard's reagent T as a marker for negative electric charges on subcellular components of rat brain in a study of the mechanism of neurotransmission and the binding and transport of drugs was reported. Presynaptic and postsynaptic membranes did not bind cationic ferritin (CF) either on their outer or their inner surface. Vesicular membranes were heavily labeled with CF. Postsynaptic and presynaptic densities were observed and found to vary from synapse to synapse. Neurotubules and neurofilaments bound CF in significant amounts. The results were discussed in terms of neurotransmission and mode of action of pharmacologic agents.

000493 Bylund, David B.; Charness, Michael E.; Snyder, Solomon H. Department of Pharmacology, Johns Hopkins University School of Medicine, 725 N. Wolfe St., Baltimore, MD 21205 **Beta adrenergic receptor labeling in intact animals with 125I-hydroxybenzylpindolol.** Journal of Pharmacology and Experimental Therapeutics. 201(3):644-653, 1977.

The use of 125I-hydroxybenzylpindolol (I-HYP), a potent beta-antagonist with a high specific radioactivity, in the labeling of beta-adrenergic receptors, in vivo, in rodent tissues is described. After the intravenous administration of I-HYP to mice, particulate bound radioactivity in the brain, heart, and lung was selectively associated with beta-adrenergic receptor sites. Total and bound radioactivity in these tissues was time dependent, reached peak value 5 minutes after injection, and increased with increasing I-HYP doses. The lung had the highest levels of radioactivity and the highest proportion of bound to total radioactivity. The amount of specifically bound I-HYP was markedly reduced by simultaneous injection of beta-agonist or antagonist, although total radioactivity in the tissues was unaffected. Little, if any, specific binding of I-HYP to a beta-adrenergic receptor is demonstrable in the liver. Characteristics of I-HYP binding in mouse heart, lungs, and brain were as expected and required for the recognition site of the beta-adrenergic receptor. 19 references. (Journal abstract modified)

000494 Cella, James A.; Kelley, James A. Division of Biochemistry, Walter Reed Army Institute of Research, Washington, DC 20012 **Preparation of spin-labeled opiates: morphine and codeine.** Journal of Pharmaceutical Sciences. 66(7):1054-1056, 1977.

The spin label method, an alternative to the radioisotope method, for studying drug/receptor interaction in vitro is described for morphine and codeine; and a preliminary study demonstrating the method's feasibility is presented. Treatment of either 6-chlorocodide or 8-bromocodide with 4-amino-2,2,6,6-tetramethylpiperidino-1-oxyl free radical in dimethylformamide afforded 6 spin labeled codeine. Similar treatment of 6-chloromorphide afforded 6 spin labeled morphine. Exclusive formation of the 6-isomer in these reactions is explained by halide ion catalyzed isomerization of of the 6-halo opiate to the 8-halo isomer followed by a normal SN2' displacement of the halogen. Both spin labeled compounds displayed weak in vivo analgesic activity and did not bind appreciably to receptors in brain homogenate. 20 references. (Author abstract modified)

000495 Colpaert, Francis C.; Niemegeers, Carlos J. E.; Janssen, Paul A. Dept. of Pharmacology, Janssen Pharmaceutica Research Laboratories, B-2340 Beerse, Belgium **Differential haloperidol effect on two indices of fentanyl-saline discrimination.** Psychopharmacology (Berlin). 53(2):169-173, 1977.

To establish differential haloperidol effect on two indices of fentanyl/saline discrimination, rats were trained to distinguish fentanyl from saline, using a discrete trial, two lever, food discrimination learning paradigm. With increasing doses of a haloperidol/fentanyl combination, the percentage of total responding on the selected lever progressively decreased, and reached the 50% level at the highest drug combination. It is concluded that this percentage is heavily contaminated by factors unrelated to the discrimination condition being studied; these factors seem to invalidate this percentage as a discrimination index under experimental conditions (e.g. behaviorally toxic doses of drugs) where they are likely to operate. The use of response selection as a discrimination index in drug discrimination research is further argued. 19 references. (Journal abstract modified)

000496 Faiman, M. D.; Dodd, D. E.; Nolan, R. J.; Artman, L.; Hanzlik, R. E. Department of Pharmacology and Toxicology, University of Kansas, Lawrence, KS 66045 **A rapid and simple radioactive method for the determination of disulfiram and its metabolites from a single sample of biological fluid or tissue.** Research Communications in Chemical Pathology and Pharmacology. 17(3):481-496, 1977.

An analytical method is described for the determination of radioactive disulfiram, diethyldithiocarbamate, diethyldithiocarbamate-methyl ester, diethyldithiocarbamate-glucuronide, inorganic sulfate, and a protein bound S35 fraction from a single sample of either plasma, urine or tissue. The procedure is based upon quantitative stepwise extraction or precipitation of the individual compounds, and is both specific and precise. The applicability of the methods developed for the determination of S35 disulfiram and its S35 metabolites in plasma and urine from a dog given S35 disulfiram i.v.,and in mouse brain from mice given S35 disulfiram intraperitoneally are illustrated. 10 references. (Author abstract)

000497 Gahwiler, B. H. Medizinisch-Biologische Forschung SANDOZ AG, CH-4002 Basel, Switzerland **Evidence for functional synapses between mixed cultures of inferior olive and cerebellum.** Experientia (Basel). 33(6):779, 1977.

In a paper presented at the 9th annual meeting of the Union of Swiss Societies of Experimental Biology in Zurich, April 1977, results from a culture preparation of cerebellum and brain region including the inferior olive from newborn rats which was embedded in a plasma clot are discussed. The data suggest that functional synaptic connections exist between cultured nerve cells of inferior olive and Purkinje cells. Nerve fibers crossing from one explant to the next could be observed. Analysis of the spontaneous activity of Purkinje cells revealed that some show complex spikes resembling the climbing fiber response observed in situ. Complex spikes could also be elicited in these cells by stimulation of nerve cells situated in the inferior olive explant. It is concluded that this mixed culture preparation may provide a valuable means to study the pharmacological properties of the climbing fiber response. (Journal abstract modified)

000498 Gal, J.; Hodshon, B. J.; Pintauro, C.; Flamm, B. L.; Cho, A. K. School of Pharmacy, University of Wisconsin, Madison WI 53706 **Pharmacokinetics of methylphenidate in the rat using single-ion monitoring GLC-mass spectrometry.** Journal of Pharmaceutical Sciences. 66(6):866-869, 1977.

A GLC mass spectrometric assay for methylphenidate in biological fluids was developed using the ethyl ester homolog of the drug as the internal standard. The procedure has a lower level of sensitivity of 1.2ng/ml and is based on GLC mass spectrometic monitoring of the m/e 180 ion common to the mass spectra of the N-trifluoroacetyl derivatives of the drug and internal standard. The brain and plasma levels of methylphenidate in rats were determined after intravenous administration of 0.5mg/kg of the drug. The two compartment open pharmacokinetic model fit the data. 26 references. (Author abstract)

000499 Guidotti, A.; Gale, K.; Hong, J.; Toffano, G. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Models to study drug effects on the integrated function of GABAergic, peptidergic (substance P) and dopaminergic neurons. (Unpublished paper).** Washington, DC, NIMH, 1977. 26 p.

Biochemical models to be used in neuropharmacological studies in animals which aim to evaluate interactions between GABAergic, catecholaminergic, and peptidergic systems in the hypothalamic/pituitary and striato/nigral neuronal circuits are proposed. It is also suggested that neuroleptic induced changes in striatal tyrosine hydroxylase can be used to reflect the action of antipsychotic and antischizophrenic drugs on GABAergic and Substance P neurons. In the first of these models, cAMP formation in A. pituitary is measured as an indication of drug influence on the interaction between GABAergic, DAergic and peptidergic neurons at the level of median eminence. In the second model, measurement of allosteric changes of tyrosine hydroxylase in striatum and substantia nigra provide a means for assessing the role of GABA and substance P containing neurons in the regulation of DA processes intrinsic to substantia nigra, or ascending from substantia nigra to striatum. 28 references. (Author abstract modified)

000500 Meek, James L.; Neckers, L. M. Laboratory of Preclinical Pharmacology, NIMH, St. Elizabeths Hospital, Washington, DC 20032 **Studies of serotonin turnover in discrete nuclei using HPLC. (Unpublished paper).** Washington, DC, NIMH, 1977. 12 p.

Basic principles of high pressure liquid chromatography (HPLC), a simple highly sensitive and specific methodology for measuring serotonin (5HT), 5-hydroxyindole acetic acid (5HIAA), 5-hydroxytrytophan (5HTP) and tryptophan (TP) and calculating serotonin turnover are summarized, its versatility is demonstrated, a modification of HPLC allowing measurment of 5-methoxytryptamine is presented, and 5HT turnover rates obtained in various brain nuclei are reported. Tissue extracts can be chromatographed directly without derivitization or isolation, thereby eliminating sample loss. A rapid separation (less than 6 min) of any of the above indoles from all the others can be achieved with one of 2 strong cation exchange columns. The columns are inexpensive, and last hundreds of analyses. Detection of the indoles is made by their fluorescence in strong acid. 13 references. (Author abstract modified)

000501 Murphy, Dennis L. Clinical Neuropharmacology Branch, NIMH, NIH Clinical Center, 10-3S229, Bethesda, MD 20014 **Animal models for mania. (Unpublished paper).** Bethesda, MD, NIMH, 1977. 12 p.

Animal models proposed for mania, mostly based upon hyperactivity induced in animals by drugs such as amphetamine (given alone in low doses or in combination with chlordiazepoxide), morphine, or desmethylimipramine combined with a monoamine releasing drug, are examined. The major evidence supporting the relevance of such drug induced hyperactivity to clinical mania is its reversal by pretreatment with lithium. This agent has minimal antianxiety or neuroleptic efficacy, but possesses definite antimanic effects as well as apparent prophylactic efficacy in patients with recurrent manic-depressive cycles. Lithium also attenuates amphetamine induced activation, euphoria and hypomanic symptomatology in man, and may block L-dopa related hypomania in man. In animal studies, increased exploratory activity and increased activity in response to novel environments seem preferentially sensitive to lithium; similarly, psychological data suggests that lithium diminishes interest in novel stimuli and physical task initiation in man. Mania seems an expecially promising disorder for the exploration of mediating mechanisms and possibly better treatments using behavioral/biological modeling approaches in animals and man because of the availability of

cross-species as well as within species models and because mania is a psychopathologic entity more completely expressed in objectively assessable behavior than other clinical syndromes. 91 references. (Author abstract)

000502 Niemegeers, C. J. E.; Lenaerts, F. M.; Artois, K. S. K.; Janssen, P. A. J. Janssen Pharmaceutica, Research Laboratoria, B-2340 Beerse, Belgium **Interaction of drugs with apomorphine, tryptamine and norepinephrine. A new 'in vivo' approach: the ATN-test in rats.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 227(2):238-253, 1977.

To provide an empirical evaluation of the relative specificity with which drugs may affect particular neurotransmitter systems, and to allow a classification of new drugs in this respect, a new experimental test procedure is described for the 'in vivo' study of drug interactions with dopamine (DA), 5 hydroxytryptamine (5-HT) and norepinephrine (NE). The data indicate that, within certain dosage limits, compounds may modulate specifically a single component of the test procedure and may thus be considered as interacting specifically to modify one neurotransmitter system: i.e. DA in the apomorphine test (e.g. pimozide), 5-HT in the tryptamine test (e.g. pizotifen) and NE in the norepinephrine test (e.g. phenoxybenzamine). Higher doses of the same compounds may, however, exert effects on other neurotransmitter systems as well, and these actions may be classified as nonspecific. Thus the concept of drug specificity as applied here is not exclusive, but refers to the dissociation, in terms of doses, which exists between a drug's effect on one neurotransmitter system and its possible effects on other systems. The ATN test spearates and delineates, in terms of doses, the specific and nonspecific effects of drugs. 21 references. (Author abstract)

000503 Overton, Donald A. Temple Univ. Health Sciences Cent., Eastern Pennsylvania Psychiatric Inst., Henry Ave. & Abbottsford Rd., Philadelphia, PA 19129 **Comparison of ethanol, pentobarbital, and phenobarbital using drug vs. drug discrimination training.** Psychopharmacology (Berlin). 53(2):195-199, 1977.

To evaluate parametrically drug vs. drug or drug vs. no drug discrimination as a method for comparing discriminable effects of drugs, rats were trained in drug discrimination in a T-maze shock/escape task with various doses of pentobarbital, phenobarbital, or ethanol. After training, rats made choices during substitution tests with the other two drugs, suggesting drug interchangeability. Training also showed that pentobarbital and phenobarbital were virtually indistinguishable from one another. However, ethanol was readily discriminated from pentobarbital, showing that the two drugs differed. The results show the utility of drug vs. drug training as a method for studying drug differences that may be too small to detect with substitution tests. 10 references. (Author abstract modified)

000504 Tallarida, Ronald J.; Kramer, Mark S.; Roy, John W.; Kester, Robert A.; Murray, Rodney B.; Adler, Martin W. Dept. of Pharmacology, Temple Medical School, Philadelphia, PA 19140 **Miosis and fluctuation in the rabbit pupil: effects of morphine and naloxone.** Journal of Pharmacology and Experimental Therapeutics. 201(3):587-592, 1977.

The response of the rabbit pupil to graded doses of morphine and the quantitive effect of naloxone in antagonizing this morphine action are examined. In the unanesthetized rabbit, morphine (12 to 16mg/kg i.v.)produced a miosis that was not sustained. The fluctuations occurred within a frequency of approximately 0.5to 2/min. The miosis and subsequent fluctuation seen with 12 and 16mg/kg of morphine was blocked by naloxone (0.5mg/kg i.v.), but 128mg/kg of morphine overcame the block. Cumulative dose/response curves for morphine and for morphine after naloxone yielded the value pA2=6.8which is in agreement with the values obtained using other effects and species. Administration of morphine after exposure to high intensity light produced less miosis than that seen under normal illumination. It was concluded that the rabbit pupillary response may provide a good correlation with other actions of morphine. 23 references. (Journal abstract modified)

CLINICAL PSYCOPHARMACOLOGY

07 EARLY CLINICAL DRUG TRIALS

000505 Al-Marashi, Murtadha S. H.; Freemon, Frank R. Neurology Service, Veterans Administration Hospital, Battle Creek, MI 49016 **Dietary tryptophan effects on the sleep of normal subjects.** Waking and Sleeping (Wurzburg). 1(2):163-164, 1977.

A pilot study to see if a diet of natural foods high in tryptophan content might improve sleep of normal subjects is described. Four female dieticians in their 20s served as subjects. For five consecutive days they ate only food specially prepared in the diet kitchen. One diet, high in beef and milk, was designed to deliver a high amount of tryptophan (daily 2.031g in 2145 calories). The amount of protein, fat, and carbohydrate were, respectively 130, 113, and 173g per day. The other diet, containing fruits and turkey, was designed to deliver a low amount of tryptophan (0.518g of tryptophan in 1943 calories). Protein, fat and carbohydrate in the diet were, respectively 47, 77, and 343g per day (crossover study weekly). The last three nights of each dietary period the S slept in the sleep research laboratory and their sleep was recorded polygraphically. The only statistically significant differences between dietary conditions were in number of awakenings and in wake time during the night. 9 references. (Author abstract)

000506 Albert, Jean-Marie; Elie, R.; Cooper, S. F.; Clermont, A.; Langlois, Y. Institut National de la Recherche Scientifique, INRS-Sante, Montreal, Canada **Efficacy of SCH-12679 in the management of aggressive mental retardates.** Current Therapeutic Research. 21(6):786-795, 1977.

The therapeutic value of SCH-12679 in the management of severe mental retardates presenting important behavioral disturbances was assessed. The effects of this new benzazepine derivative on abnormal aggressivity were compared to those of a placebo. Drug related changes in the syndrome were estimated thrice weekly during a one month period using an eight point target symptom scale and a physician global evaluation scale. Violence, destructiveness, anger, agitation and unruliness were reduced in the SCH-12679 group as compared to the placebo group. Clinically the patients improved during the SCH-12679 administration and the drug was assessed as better than placebo. Tolerance to the drug was good. The results suggest that SCH-12679 is of therapeutic value in the treatment of some behavioral disturbances of mental retardates. 11 references. (Author abstract)

000507 Catlin, Don H.; Hui, Ka Kit; Loh, Horace H.; Li, Choh Hao. Depts. of Pharmacology and Medicine, University of California, Los Angeles, CA 90024 **Pharmacologic activity of beta-endorphin in man.** Communications in Psychopharmacology. 1(5):493-500, 1977.

To determine the pharmacologic dose of beta-endorphin in man and to elucidate the acute effects in patients with chronic pain and in narcotic addicts undergoing acute methadone withdrawal human beta-endorphin was administered to three patients with cancer and two in methadone withdrawal. The subjects also received morphine as a control and saline as a placebo. Results indicated that beta-endorphin did not produce adverse clinical effects or evidence of toxicity; euphoria was not reported and catatonia was not observed. The pain subjects reported good analgesia and mild improvement in mood. The methadone dependent subject reported relief of symptoms and most of the objective signs of abstinence were reversed. It is concluded that there were no adverse effects associated with the doses of beta-endorphin administered, and the results provide evidence that beta-endorphin may possess analgesic and narcotic abstinence suppressing properties in man; additional clinical trials with strict double-blind procedures are warranted. 13 references. (Author abstract modified)

000508 Charalampous, K. D.; Sermas, Chris E.; Newsom, William A.; Keepers, George A. Department of Psychiatry, Baylor College of Medicine, Texas Medical Center, Houston, TX **A double-blind controlled study of clobazam for the treatment of anxiety in psychiatric outpatients.** Current Therapeutic Research. 21(6):779-785, 1977.

Thirty four psychiatric outpatients, 18 males, and 16 females, ranging in age from 19 to 59 years were selected for a controlled study of clobazam, a recently synthesized 1,5 benzodiazepine, which was compared to placebo in a double-blind randomized efficacy trial. The 30 patients in the trial had a diagnosis of anxiety neurosis which was at least moderately severe. Fourteen received a placebo and sixteen received the drug in increasing doses for one week. Comparison of the two groups on the basis of pretreatment and posttreatment Hamilton Anxiety Scores and Clinical Global Improvement Scores indicated definite superiority of clobazam over placebo in the treatment of anxiety. The most common side-effects were drowsiness and dizziness. 16 references. (Author abstract modified)

000509 DeHaan, Ray M. Bronson Methodist Hospital, Kalamazoo, MI 49001 **New drug testing in the consenting adult.** Clinical Medicine. 84(6):17-18, 1977.

Procedural methods of evaluating new therapeutic substances in a hospital based clinical pharmacology unit using free living subjects are described. A system whereby protocols undergo several levels of scrutiny to minimize the possibility of subordinating the interest of the volunteer to the needs of the clinical goal is outlined. A protocol review committee consisting of a lawyer, a clergyman, a social worker, and four physicians plus a consulting clinical pharmacologist initially determines: 1) risks to subjects; 2) potential benefits to subjects or society; and 3) whether the study design provides optimum scientific information with minimal risks. An informed consent specifically worded for each study is presented to volunteers which outlines the need for the proposed therapy, risks and benefits, necessity for using human subjects, and which emphasizes the privacy right of the consenting adult. This presentation is videotaped and available to the Protocol Review Committee for review. A patient advocate is available to evaluate the process. A questionnaire to evaluate subject comprehension of informed consent is also reviewed. Volunteers are patients of local physicians, who are consulted to evaluate the appropriateness of inpatient care. Attitude surveys and personal interviews with 1500 volunteer Ss provide a critique of the unit's activities. It is felt that with such a system a cooperative arrangement between an institution whose prime concern is patient care and one whose orientation is the development of new safe medicinals is feasible. 2 references.

000510 Fabre, L. F., Jr.; McLendon, D.; Mallette, A. Fabre Clinic, Houston, TX 77000 **A double-blind clinical trial of bupropion HCl -- A novel antidepressant.** Clinical Pharmacology and Therapeutics. 21(1):102, 1977.

Results of a double-blind trial of bupropion HCl (dl-alpha-t-butylamino-3-chloropropiophenone HCl) with placebo in patients with endogenous depression were reported at the 78th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, Dallas, 1977. Bupropion was more effective than placebo and was found to be active within the first week of therapy, markedly alleviating depressive symptoms as measured by the Hamilton Depression Scale and the Zung self-rating scale. This new drug differs chemically from tricyclic drugs, is not a monoamine oxidase inhibitor, is essentially devoid of anticholinergic properties, and has no peripheral adrenergic activity except for pupillary dilation. It does not produce EKG or EEG changes or laboratory abnormalities. Bupropion may represent the first of a new class of antidepressant compounds which have the advantage of rapid action and minimal side-effects. 2 references.

000511 Hartmann, Ernest. Boston State Hospital, Tufts University School of Medicine, Boston, MA 02124 **L-tryptophane as an hypnotic agent: a review.** Waking and Sleeping (Wurzburg). 1(2):155-161, 1977.

Studies of the hypnotic effects of the amino acid l-tryptophane are reviewed and contrasted with the dangers of other hypnotics which are CNS depressants and have no relation to the biochemistry of sleep. Eleven studies involving a total of 193 subjects are reviewed in which EEG, EOG, and EMG recordings comparing l-tryptophane and placebo demonstrate that it is effective in reducing sleep latency and reducing waking time. Unlike CNS depressants, l-tryptophane is rapidly metabolized, and at low doses does not produce distortions of physiological sleep. Investigations of toxicity of l-tryptophane after short-term and long-term administration, carcinogenic effects, and effects on protein synthesis are called for. Though the efficacy of l-tryptophane in reducing sleep latency and waking time and increasing subjective sleepiness is demonstrated, the mechanisms of action remain to be studied; possible mechanisms, such as increase in brain serotonin or interference with dopamine or norepinephrine synthesis by competition with tyrosine or DOPA, are suggested for future research. 30 references.

000512 Mielke, D. H.; Gallant, D. M.; Roniger, J. J.; Kessler, C.; Kessler, L. R. Tulane University School of Medicine, New Orleans, LA 70112 **Sulpiride: evaluation of antipsychotic activity in schizophrenic patients.** Diseases of the Nervous System. 38(7):569-571, 1977.

To determine therapeutic dose range while evaluating side-effects and toxicity of sulpiride, a chemically different new antipsychotic, 10 schizophrenic inpatients were administered sulpiride in doses from 200mg per day up to 1600mg per day over a 10 week period. Overall findings indicated that sulpiride exerts definite neuroleptic activity in severely ill schizophrenics. At 400mg patients displayed greater interest in environment and improved appetite. Hostility, combativeness, agitation, and social withdrawal diminished as dosage approached 1000mg. Between 1000mg and 1600mg core schizophrenic symptoms, as well as hallucinations and delusions, ameliorated. One patient required a dosage of 2600mg to obtain maximum clinical improvement. A mild leukocytosis were found in one patient and broadened and flattened T-waves in another at high doses. No other side-effects were encountered, and toxic levels appear to be well beyond the therapeutic range. 12 references.

000513 Sappington, Andrew A.; Corssen, Guenter; Becker, Arthur T.; Tavakoli, Mehrdad. Psychology Department, University of Alabama, Birmingham, AL 35294 **Effects of ketamine on patient responsiveness during the various phases of a single induced anxiety session.** Alabama Journal of Medical Sciences. 14(2):121-124, 1977.

The effects of ketamine on patient responsiveness during various phases of a single psychotherapeutic induced anxiety session are reported. An attempt was made to facilitate a psychotherapy technique called induced anxiety by using low doses of the drug ketamine to increase physiological arousal during treatment sessions. Once subjects were aroused emotionally and physiologically, they used previously learned techniques of relaxation to reduce this arousal. In effect, subjects practiced a coping response which they could then use to cope with future stress situations. Seven normal subjects each went through a single induced anxiety session, once with the conventional procedure supplemented only by a placebo, and once with the conventional procedure supplemented by ketamine. Heartrate and multiple affect adjective checklist data were collected for each of the phases of induced anxiety both with and without the drug. Ketamine facilitated physiological arousal but inhibited subjective emotional arousal. Theoretical and pragmatic implications and the possibility of using the induced anxiety technique as a tool for drug research are discussed. 16 references. (Author abstract)

000514 Temkov, I. V.; Yonchev, V.; Stefanova, E.; Mikhov, V. no address **/Clinical examination of the new antipsychotic Clozapin (Leponex)./** Klinichno izpitvane na noviya antipsikhotikum Clozapin (Leponex). Nevrologiya, Psikhiatriya i Nevrokhirurgiya (Sofiya). 16(2):74-82, 1977.

Characteristics and effects of the neuroleptic Clozapin (Leponex) were studied with the method adopted by the First Psychiatric Clinic of the Medical Academy in Sofia, which consists of recording the effects of the drug on 12 symptom indicators, the general course of the disease, dosage, and undesirable side-effects. The sample group consisted of 54 patients, aged 16 to 64, with diagnoses of schizophrenia (37), cyclothymia (13) or other affective disorders (4). It was demonstrated that Clozapin has strong hypnotic and sedative effect, as well as antipsychotic effects. It has positive effect in the treatment of acute schizophrenia and manic states, and is superior to classical neuroleptics in the treatment of chronic schizophrenia since it does not cause extrapyramidal complications. It also proved to be effective in preventing late neuroleptic dyskinesia. 22 references. (Journal abstract modified)

000515 Tsirlin, M. Ya. Kafedra nervnykh bolezney I Leningradskogo meditsinskogo instituta im. I. P. Pavlova, Leningrad, USSR **/Rheoencephalographic data in migrain cephalgia and their changes during Stugeron treatment./** Reoentsefalograficheskie dannye pri migrenoznykh tsefal'giyakh i ikh dinamika pri lechenii stugeronom. Zhurnal Nevropatologii i Psikhiatrii im. S. S. Korsakova (Moskva). 77(3):343-347, 1977.

Effects of the drug Stugeron on patients with migraine cephalgia were studied by rheoencephalographic analysis. Since regional hypertonia of cerebral vessels and cerebral angiodystonia with a tendency toward spastic reactions was observed to accompany migraine headaches, Stugeron treatment was effective in 85 of 100 patients, especially those with increased tone of cerebral vessels. The patients showed normalization of vascular tone, an increase in the cerebral blood flow, and a decrease in hemispheric asymmetry. 7 references. (Journal abstract modified)

000516 Widlocher, D.; Lecrubier, Y.; Jouvent, R.; Puech, A. J.; Simon, P. Service de Psychiatrie, Hopital de la Salpetriere, F75634 Paris, Cedex 13, France **Antidepressant effect of salbutamol.** Lancet (London). No. 8041:767-768, 1977.

Results of a preliminary trial of the antidepressant effects of the beta-adrenergic stimulant salbutamol in 10 patients with endogenous depression are reported in a letter to the editor. Administration of salbutamol resulted in dramatic improvement of 9 out of 10 patients treated. Antidepressant effects became evident as early as 48 hours after initiation of treatment. Distinct improvements in mood, retardation, and anxiety were noted on the third day of treatment; and pretreatment delusions in two patients disappeared. Dose and administration were similar to those used in obstetrics.

000517 Zapletalek, M.; Hubsch, T.; Zbytovsky, J.; Polackova, J.; Kindernayova, H. Psychiatric Clinic, Charles University, Hradec Kralove, Czechoslovakia **/Clinical and experimental experience with maprotiline, clomipramine, sydnocarb, and mefexamine in psychiatric patients and normal subjects./** Klinische und experimentelle Erfahrungen mit Maprotilin, Clomipramin, Sydnocarb und Mefexamid bei psychisch kranken und gesunden Personen. Schweizer Archiv fur Neurologie, Neurochirurgie und Psychiatrie (Zurich). 120(2):323-334, 1977.

Clinical and experimental experience with the new psychotropic drugs maprotiline, clomipramine, sydnocarb, and mefexamide are reported. During the experimental phase, the effects of the drugs on patients and normal subjects were compared with results obtained with placebo. Effects were evaluated for attention, task performance, psychomotor rate, numerical quadrate, Bourdon test, tapping, and some functions of the autonomic nervous system (mean orthostatic acceleration), clinostatic retardation and sympathetic and vagus tonus. Psychotropic and autonomic effects of each agent are listed. 17 references. (Journal abstract modified)

08 DRUG TRIALS IN SCHIZOPHRENIA

000518 Abuzzahab, F. S., Sr. University of Minnesota Hospitals, Minneapolis, MN **Evaluations of social functioning in a 3-year double-blind investigation of pimozide versus fluphenazine in chronic schizophrenia.** Psychopharmacology Bulletin. 13(1):71-73, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, a study in which sixty two chronic schizophrenic outpatients administered pimozide or fluphenazine in a double-blind treatment program were psychiatrically evaluated over a three year period to study long-term modification of social functioning is reported. Psychiatric evaluations at regular intervals included the Brief Psychiatric Rating Scale (BPRS), Clinical Global Impressions (CGI), and Treatment Emergent Symptoms Scale (TESS), as well as self-ratings. Patients on fluphenazine showed the largest improvement up to six months in self-rating of work performance, while after 6 months, pimozide patients were favored. A general trend in favor of pimozide was noted for work performance and household tasks from 12 months on. Both drugs were equal in reducing probability of relapse or rehospitalization. However, in patients remaining in the study for over one year, both psychiatrist ratings and self-ratings of social adjustment showed significant differences favoring pimozide. The need to conduct drug trials in a community practice, outpatient setting is emphasized. 1 reference.

000519 Ananth, Jambur; Costin, Avrum. St. Mary's Hospital, 3830 Lacombe Avenue, Montreal, Quebec H3T 1M5, Canada **Dyskinesia with thiothixene.** American Journal of Psychiatry. 134(6):689-690, 1977.

The development of dyskenesia in a 27-year-old schizophrenic patient following 1 year of thiothixene administration is reported. The patient, originally treated with chlorpromazine for paranoid schizophrenia was transferred to thiothixene alone with occasional supplements of diazepam and/or flurazepam. One year after initiation of thiothixene therapy, the patient manifested chewing movements and choreiform movements of the tongue and face. Thiothixene has been continued as the patient has returned to work; dyskinesia has also continued with varying intensity. 4 references.

000520 Ban, Thomas A.; Lehmann, Heinz E. 1501 Murfreesboro Road, Nashville, TN 37217 **Myths, theories and treatment of schizophrenia.** Diseases of the Nervous System. 38(9):665-671, 1977.

The myths and etiological and therapeutic theories which have centered on schizophrenia are reviewed. The biggest single change in status of schizophrenics has come about by the developments in pharmacotherapy of schizophrenia since midcentury. Various treatment modalities are discussed, particularly for the acute onset and acute excitement, and the treatment of intercurrent somatic diseases in the presence of schizophrenia. The characterizations of Szasz and Laing are dismissed in favor of biochemical and genetic theories of the origins of schizophrenia, which include the transmethylation theory of schizophrenia (Seymour Kety, 1967), possibly responsible for the formation of psychotoxic substances in the human system. The course of pharmacotherapy of schizophrenia is outlined. 50 references.

000521 Bigelow, Llewellyn B.; Nasrallah, Henry; Carman, John; Gillin, J. Christian; Wyatt, Richard Jed. Lab. Mental Health of Clinical Psychopharmacology, Division of Special MH Research, NIMH Elizabeths Hospital, Washington, DC 20032 **Baclofen treatment in chronic schizophrenia: a clinical trial.** American Journal of Psychiatry. 134(3):318-320, 1977.

A study of beta-(4-chlorphenyl) gamma aminobutyric acid (baclofen) treatment in chronic schizophrenia was undertaken to replicate Frederiksen's findings (1975) which indicated significant improvement in such cases by the addition of baclofen to the neuroleptic regimen. Nine young chronic schizophrenic patients volunteered to participate in a double-blind crossover study of the effect of baclofen. Three broad categories of psychopathology -- psychosis, arousal, and depression -- were monitored twice daily by the nursing staff. The items used for psychosis were loss of emotions, statements of delusions, stated hallucinations, hallucinatory behavior, bizarre behavior, and disorganized speech. For arousal, the items were irritability, angry behavior, angry statements, hyperactivity, uncooperativeness, and euphoria. Depression items consisted of depressive behavior, depressive statements, dependency, decreased activity, and social isolation. Results of the study indicated that none of the patients showed major clinical improvement. This negative study and other negative reports do not support the contention that baclofen exerts a beneficial effect on schizophrenic illnesses. 10 references.

000522 Buchan, T. Ingutsheni Hospital, Bulawayo, Rhodesia, South Africa **Clothiapine in management of schizophrenia.** South African Medical Journal. 51:237-240, 1977.

To investigate the use of clothiapine in the management of schizophrenia, 34 male patients diagnosed as schizophrenic were allocated alternatively to treatment with either clothiapine or chlorpromazine. The groups were comparable in age, duration of illness, type of onset, and number of previous attacks, as well as in severity and symptom profiles. The degree of regression of psychotic symptoms, assessed by the Brief Psychiatric Rating Scale, was comparable for the two groups. Results indicate that side-effects were not troublesome with clothiapine and that there was no evidence of disturbed liver function, although hemoglobin values and white cell counts were sometimes decreased. EEG studies showed that clothiapine produced an increase in the slow activity but no paroxysmal activity. It is concluded that clothiapine appears to have an effect comparable to that of chlorpromazine in acute schizophrenia, but because it can be given parenterally in large doses without discomfort to the patients, it is a valuable addition to the drugs available.

000523 Davis, John M.; Hurt, Stephen W. Illinois State Psychiatric Institute, Chicago, IL **Methodological issues in psychopharmacological research.** American Journal of Orthopsychiatry. 47(3):523-528, 1977.

In a letter to the editor, the claims of methodological inadequacies in studies of the efficacy of chlorpromazine (CPZ) in schizophrenia, as raised by Marholin and Phillips, are refuted. Review of the eight studies cited by the authors is offered to refute the following four methodological problems cited by Marholin and Phillips: 1) insufficient double-blind procedures; 2) failure to report interobserver reliabilities; 3) patient dropouts; and 4) use of a flexible dose strategy. Additionally, evidence is presented against Marholin and Phillips' sedation as an artifact hypothesis, and their criticism of the use of reduction of symptoms as insufficient criteria for treatment evaluation. Questions concerning research design are also answered. It is concluded that substantial evidence supports the efficacy of CPZ and related drugs in the treatment of schizophrenia, but that the issues involved in the study of pharmacologic intervention in schizophrenia are not whether the drugs are effective nor whether group designs are an adequate vehicle for measuring their effectiveness, since these points are well established. 23 references.

000524 Dencker, Sven J.; Lepp, Marje; Malm, Ulf. Klinik II, Lillhagens sjukhus, S-422 03 Hisings-Backa 3, Sweden **/Relapse rates of schizophrenic psychoses./** Synpunkter pa recidiv vid schizofrena psykoser. Nordisk Psykiatrisk Tidsskrift (Kungsbacka). 30(7):498-499, 1977.

Relapse rates of schizophrenic psychoses were investigated in 217 patients treated with neuroleptic drugs. The study was divided into three groups according to number of years of treatment between 1971 to 1974, 1973 to 1974, and 1974 to 1976. Of the total population 25 relapses occurred between 1972 and 1976. Among them only 7 patients were over 50 years old and 12 patients were between 30 and 39 years old. Recidivism in 17 cases was due to either cessation or change of drug. The duration of the relapses was more than 6 months in five cases. The duration of the relapses was shorter between 1974 and 1976 than previous periods, which reflects a recent trend to intensified patient followup studies.

000525 Eggers, Christian. Abt. fur Kinder- und Jugendpsychiatrie, Osianterstr. 14, D-7400 Tubingen, Germany **/The therapy of childhood schizophrenia./** Die Therapie der kindlichen Schizophrenie. Schweizer Archiv fur Neurologie, Neurochirurgie und Psychiatrie (Zurich). 120(2):205-215, 1977.

Psychopharmacotherapy and psychotherapy of childhood schizophrenia are discussed. Due to the multifaceted genesis and variability of clinical phenomenology, the therapy of childhood schizophrenia must be multidimensional. Formerly applied techniques such as electroshock and insulin therapy are now replaced by pharmacotherapy, primarily with phenothiazines, butyrophenones and chlorprothixens. Psychopharmacotherapy alone, however, is insufficient, and extreme emphasis must be placed on psychotherapy and educational guidance and counseling of the psychotic child. Participation in play groups, sports, musical activities, arts and crafts, and playacting helps improve communication behavior and transform aggressive anxiety defenses into stabilized control of emotions and impulses. In addition to successive integration of the psychotic child into small groups, play therapy with the single child is meaningful. In this case, a constant and confidential relationship between therapist and child is extremely important. The therapist must learn the psychotic language of the patient to support more reality oriented behavior processes. In this manner, magic/omnipotent fantasies may be dissolved, and nonpathological ego functions supported, and a new level of ego functioning initiated. Such an integrated developmental concept can best be realized through play therapy. 37 references. (Journal abstract modified)

000526 Exner, John E., Jr.; Murillo, Luis G. Stony Lodge Hospital, Croton Dam Road, Ossining, NY 10562 **A long term follow-up of schizophrenics treated with regressive ECT.** Diseases of the Nervous System. 38(3):162-168, 1977.

Schizophrenics treated with regressive electroconvulsive therapy (N=28), chloropromazine or haloperidol (N=16), and normal controls (N=25) were followed for at least 24 months postdischarge and administered a battery of psychiatric tests to determine effectiveness of treatment. The performances of the two schizophrenic groups did not differ significantly from each other on any of the psychological tests involving intelligence, memory or other cognitive functions but there were numerous differences between the normal subjects and the two schizophrenic groups. The normals performed significantly better in several intellectual operations including judgment, remote memory, abstraction, and social awareness. The composite profiles of the psychological test data, for both experimental groups, continued to have many of the characteristics found in schizophrenic records. It is suggested that electroconvulsive therapy compares favorably to drug therapy in promoting long-lasting gains. 8 references.

000527 Guirguis, E.; Voineskos, G.; Gray, J.; Schlieman, E. Queen Street Mental Health Centre, Toronto, Canada **Clozapine (Leponex) vs chlorpromazine (Largactil) in acute schizophrenia (a double-blind controlled study).** Current Therapeutic Research. 21(5):707-719, 1977.

The efficacy of clozapine, in countering acute schizophrenic psychosis, was compared to that of chlorpromazine in a double-blind controlled study involving 50 patients with acute schizophrenia. The measures used included the Brief Psychiatric Rating Scale, Nurses Observation Scale for Inpatient Evaluation, and Global Clinical Impression as well as laboratory tests and vital signs. Statistical analysis of results shows that on all three scales both drugs gave significant improvement. The side effects encountered include 4 cases of hyperthermia in patients who received clozapine. It is concluded that clozapine is an effective drug with hardly any extrapyramidal side effects but that further studies are required to clarify the hyperthermia question. 8 references. (Author abstract modified)

000528 Hogarty, Gerard E. University of Pittsburgh, Pittsburgh, PA **Data analysis: collaborative outpatient schizophrenia study.** Final Report, NIMH Grant MH-26196, 1977. 8 p.

Data analysis is presented of a study to determine the relative ability of maintenance chemotherapy and social therapy to forestall relapse and enhance the personal and social adjustment of schizophrenic patients following hospital discharge. Chlorpromazine therapy was significantly more effective than placebo in forestalling relapse, but overall, social therapy had no effect in forestalling relapse. However, it did affect time in the community according to clinical characteristics of patients; for some it lengthened time in the community, for others, it hastened relapse. There were no effects of drug treatment or social therapy per se on adjustment. Together with the relapse data, these results suggest that certain patients are vulnerable to the stimulation of social therapy..

000529 Huber, G. Abteilung fur Psychiatrie und Neurologie der Medizinischen Hochschule, Ratzeburger Allee 160, D-2400 Lubeck, Germany **/Long-term treatment of schizophrenia in medical practice./** Langzeittherapie der Schizophrenie in der Praxis. Medizinische Welt (Stuttgart). 28(5):213-217, 1977.

Indications for protracted outpatient treatment of schizophrenics are examined, and psychotropic drug maintenance programs are proposed. Drug maintenance regimens for schizophrenics are indicated for at least 4 months after discharge. Although medication is terminated as soon as the patient's condition permits, some patients may require treatment for years or for life. Drug treatment is accompanied by psychotherapy to normalize the patient's social life. The neuroleptic or thymoleptic drug of choice depends on the target symptoms established by precise diagnosis. Phenothiazines (e.g. chlorpromazine, Megaphen) and butyrophenones (e.g. Haloperidol) are the most commonly used neuroleptics. Dosage is adjusted to remain below the threshold of extrapyramidal hypokinesia. Thymoleptics appropriate to the treatment of schizophrenia include imipramine (Tofranil) and amitriptyline (Saroten, Laroxyl, Tryptizol). A tabulation of neuroleptics of mild, moderate, high, and very high potency is provided, together with median daily dosage and commonly encountered side-effects. Highly potent neuroleptics are most effective in protracted treatment. Retard and depot preparations are chosen when available. While residual, posterpsyychotic symptoms usually respond to psychopharmaceuticals, structurally rigid delusions and paranoid hallucinatory states are generally drug resistant. 11 references.

000530 Huey, Leighton; Janowsky, David S.; Storms, Lowell; Leichner, Pierre. Dept. of Psychiatry, University of California at San Diego, School of Medicine, La Jolla, CA 92037 **Psychodiagnostic use of methylphenidate.** Psychopharmacology Bulletin. 13(1):52-53, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, a study of the possible use of methylphenidate (which intensifies psychotic symptoms after intravenous administration) as a psychodiagnostic aid in evaluating schizophrenic patients is reported. Psychological tests were administered prior to and after administration of methylphenidate to 16 schizophrenic patients and 17 nonpsychotic patients. Methylphenidate caused a significant increase in the psychosis ratings of the schizophrenic patients, but not the nonpsychotic patients, 20 min after infusion. The drug also caused an increase in pathologic responses to projective tests and decreased performance on a word association test in the schizophrenic patients. It is posited that the psychostimulant, when used in addition to clinical observation and administration of psychologic tests, may be useful in the rapid differential diagnosis of the schizophrenic patient. In addition, use of a methylphenidate interview at the end of hospitalization may allow a clinician to determine whether the patient is clinically remitted and free of psychotic symptoms or merely withholding information. 3 references.

000531 Itoh, Hitoshi; Miura, Sadanori; Yagi, Gohei; Sakurai, Shinsuke; Ohtsuka, Nobuo. Dept. of Neuropsychiatry, School of Medicine, Keio University, Tokyo, Japan **Some methodological considerations for the clinical evaluation of neuroleptics -- comparative effects of clozapine and haloperidol on schizophrenics.** Folia Psychiatrica et Neurologica Japonica (Tokyo). 31(1):17-24, 1977.

The characteristics of clinical effects of clozapine and haloperidol were evaluated in a double-blind, comparative trial conducted on 91 schizophrenic inpatients. The changes of symptoms were assessed by means of several psychiatric and behavioral rating scales. After 12 weeks of treatment, though no significant difference in general improvement rate was noted between the two groups, a marked different spectrum of clinical effects was observed according to the rating scales, Clozapine proved superior in antidelusional, contact promoting and sedative anxiolytic effect, while haloperidol was superior in its antiautistic effect. Among the side-effects, extrapyramidal symptoms were significantly more severe in the haloperidol group but the frequency of appearance of fever was significantly greater in the clozapine group than the other. The four dropout cases of the clozpine group were all due to fever. Through this clinical trial, clinical availability and validity of various statistical analytical methods were reconsidered. 7 references. (Author abstract modified)

000532 Janowsky, David S.; Segal, David S.; Abrams, Alan; Bloom, Floyd; Guillemin, Roger. Dept. of Psychiatry, University of California, School of Medicine, 225 W. Dickinson St., San Diego, CA 92103 **Negative naloxone effects in schizophrenic patients.** Psychopharmacology (Berlin). 53(3):295-297, 1977.

The psychological effects of naloxone, an opiate antagonist administered to schizophrenic patients, was studied, on the supposition that the opiate like neuropeptides, such as beta-endorphin, might be involved in the etiology of schizophrenic symptoms. Naloxone and a placebo were administered intravenously to 8 schizophrenic patients being a double-blind, crossover design. Naloxone was not found to be different from the placebo in affecting schizophrenic symptoms, including hallucinations and delusions. It was suggested, however, that since the subject patients had been receiving other neuroleptic agents, the results do not preclude the possibility that naloxone alone may relieve psychotic symptoms in other schizophrenic subjects. (Author abstract modified)

000533 Janowsky, David S.; Segal, David S.; Bloom, Floyd; Abrams, Alan; Guillemin, Roger. Department of Psychiatry, University of California, San Diego, School of Medicine, P.O. Box 109, La Jolla, CA 92037 **Lack of effect of naloxone on schizophrenic symptoms.** American Journal of Psychiatry. 134(8):926-927, 1977.

A double-blind crossover design study of the possible antipsychotic properties of naloxone failed to reveal any reduction in psychotic behavior of eight male schizophrenic patients. Following administration of 1.2mg of intravenous naloxone or saline placebo, each patient was interviewed by a psychiatrist who rated the patients at 15 minute intervals using

the Brief Psychiatric Rating Scale (BPRS) and asked them to describe any psychological or physical effects. No significant changes occurred in the following BPRS categories: hallucinations, conceptual disorganization, unusual thoughts, mannerisms, grandiosity, blunted affect, and depression. It is cautioned, however, that the efficacy of naloxone in treatment of schizophrenia cannot be completely discounted. 7 references.

000534 Johnson, D. A. W. University Hospital of South Manchester, Manchester, England **Practical considerations in the use of depot neuroleptics for the treatment of schizophrenia.** British Journal of Hospital Medicine (London). 17(6):546-548, 553-554, 556, 558, 1977.

Practical considerations in the use of depot neuroleptics for the treatment of schizophrenia are examined. With long-acting depot neuroleptic drugs the duration of inpatient stay can be reduced by 50% in acute schizophrenia, and maintenance therapy can reduce the likelihood of relapse by 30 to 70%, depending on the duration of therapy. The pharmacological protection offered by neuroleptic drugs is ineffective in preventing a relapse in almost 1/3 of schizophrenic patients. Side-effects frequently may be abolished by adjusting the drug prescription, and the routine use of antiparkinsonian drugs is both unnecessary and potentially harmful to the patient. Monitoring of a personalized drug regimen is required not only to minimize side-effects, but also to prevent current overtreatment of nearly 50% of the patients. 91 references.

000535 Kety, Seymour S. Harvard Medical School, Boston, MA 02114 **The biological substrates of schizophrenia.** In: NIMH, Research of disorders of the mind: progress & prospects. Rockville, MD, NIMH, 1977. 54 p. (p. 2-6).

A condensed version of a paper on the biological substrates of schizophrenia delivered at the 100th meeting of the National Advisory Mental Health Council is presented. Discoveries from the last 30 years which have furthered the study of schizophrenia are reviewed. Some of these areas include: studies of the metabolism of epinephrine; genetic and twin studies of schizophrenia; studies in the use of chlorpromazine in the treatment of schizophrenia; and the results of the techniques for identifying certain neurotransmitters in the brain by means of their characteristic fluorescence under appropriate conditions. Additional areas of research on the chemical disturbances which form the biological substrates of schizophrenia are mentioned.

000536 Klerman, Gerald. Harvard Medical School, Boston, MA 02114 **Analysis of the impact of phenothiazines and related drugs on the treatment of schizophrenia.** In: NIMH, Research on disorders of the mind: progress & prospects. Rockville, MD, NIMH, 1977. 54 p. (p. 20-21).

A condensed version of a paper delivered at the 100th meeting of the National Advisory Mental Health Council on the analysis of the impact of phenothiazines and related drugs on the treatment of schizophrenia is presented. The characteristics of phenothiazine and related drugs are reviewed. The consequences of the use of these drugs on the health care system are analyzed. Some of these consequences involve increased outpatient care and the opening up of laboratory and clinical psychopharmacological research. The need to study the psychosocial consequences of community treatment is cited.

000537 Kline, Frank; Burgoyne, R. W.; Yamamoto, Joe. Adult Psychiatric Outpatient Clinic, Los Angeles County-USC Medical Center, Los Angeles, CA **Comparison of pimozide and trifluoperazine as once-daily therapy in chronic schizophrenic outpatients.** Current Therapeutic Research.

A comparison study was conducted of pimozide and trifluoperazine as once-daily therapy in 44 chronic, ambulatory, schizophrenic patients who were maintained on moderate doses of neuroleptic medication and who participated in a 16 week double-blind study. They were treated with once daily doses of pimozide or trifluoperazine. Effective dose ranges were pimozide 4 to 12mg/day, trifluoperazine 5 to 25mg/day. Global evaluation of therapeutic affect showed 64% of the pimozide and 73% of the trifluoperazine patients were satisfactorily maintained or improved. Pimozide more than trifluoperazine reduced symptoms of anxiety, suspiciousness and motor retardation. In a few patients pimozide produced dramatic clinical improvement. Improved social adjustment suggests that pimozide may be useful to motivate a few carefully selected apathetic patients. 15 references. (Author abstract modified)

000538 Marholin, David, II; Phillips, David. no address **/Reply to Davis and Hurt concerning methodological issues in psychopharmacological research with chlorpromazine./** Marholin and Phillips reply. American Journal of Orthopsychiatry. 47(3):528-533, 1977.

In a letter to the editor commenting on Davis and Hurt's reply to the authors' criticism of methodological issues in psychopharmacological research, it is posited that Davis and Hurt fail to acknowledge questions raised regarding drug dependent learning and methodological problems associated with group data which tend to obscure individual response differences. Methodological errors are raised in regard to: 1) double-blind considerations; 2) interrater reliability estimates; 3) standardized versus flexible dose strategies; 4) criterion for change measure; 5) operationally defined target behavior; 6) the use of single subject or ABA type experimental designs; and 7) statistical methodologies for intrasubject replication designs. It is concluded that methodological inadequacies preclude the unquestioning acceptance of the vast literature supporting the therapeutic efficacy of chlorpromazine in the treatment of the schizophrenias. 38 references.

000539 McCreadie, Robin G.; MacDonald, Ian M. Gartnavel Royal Hospital, 1055 Great Western Rd., Glasgow G12 0XH, Scotland **High dosage haloperidol in chronic schizophrenia.** British Journal of Psychiatry (London). 131:310-316, 1977.

To determine the efficacy of high dosage haloperidol in chronic schizophrenia, a double-blind chlorpromazine controlled trial was conducted in which chronic schizophrenics were administered 100mg/day haloperidol for 3 months. It was found that high dosage haloperidol appreciably improved the mental state of male chronic 'drug resistant' schizophrenic inpatients in the rehabilitation/long-stay unit of one psychiatric hospital. The results of a 3 month followup suggested that the improvement could be maintained in some patients on lower doses of the drug. Serious extrapyramidal side-effects were not seen at high doses. However, the majority of patients on haloperidol showed a deterioration in ward behavior, possibly related to drowsiness, and developed raised serum alkaline phosphatase levels. These side-effects disappeared in the followup period when either the drug was discontinued or the dose of haloperidol reduced. 19 references. (Author abstract modified)

000540 Meltzer, H. Y.; Goode, D. J.; Fang, V. S. Dept. of Psychiatry, University of Chicago Pritzker School of Medicine, Chicago, IL **Effects of chlorpromazine on plasma**

prolactin and chlorpromazine levels. Psychopharmacology Bulletin. 13(1):59a60, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, a study in which a single 50mg intramuscular dose of chlorpromazine (CPZ) was administered to 16 unmedicated schizophrenic patients to investigate its effect on plasma prolactin (Prl) levels, which are increased by blockade of dopamine (DA) receptors, is reported. Prl increases began 15 min. after administration of CPZ in most subjects and reached their peak at 60, 90, or 120 min. Prl increases varied markedly, but there was no difference in levels between males and females. The mean Prl increases relative to preinjection levels were not significantly different in the schizophrenics compared to those produced in 18 controls. The increase in Prl produced by CPZ is antagonized by DA, suggesting that increased dopaminergic activity was absent in the hypothalamo/pituitary axis of schizophrenics. There was no correlation between plasma Prl and CPZ levels; however, during chronic oral administration of CPZ in another study, a positive correlation existed between CPZ and Prl levels within, but not across, individuals. It is suggested that the magnitude of Prl response after chronic administration of CPZ may not be indicative of changes in blood levels of CPZ, though plasma Prl levels may be useful in determining occurrence of maximum blockage of pituitary dopamine receptors. 3 references.

000541 Mielke, D. H.; Gallant, D. M. Tulane University School of Medicine, New Orleans, LA **Molindone: a controlled evaluation of the intramuscular antipsychotic preparation.** Current Therapeutic Research. 22(3):356-360, 1977.

The intramuscular preparation of molindone was compared with intramuscular trifluoperazine in maximum doses of 100mg and 16mg each day, respectively, in 20 chronic schizophrenic patients in acute exacerbation. Effects of the two injectable drugs were evaluated at baseline, and at the end of 1 week of medication. Evaluation of the pooled global ratings of improvement and analysis of covariance of the psychometric measurements showed that molindone injectable displayed clinical efficacy equal to the intramuscular preparation of the reference compound, trifluoperazine. In the doses given, molindone showed a trend towards exhibiting greater incidence of extrapyramidal symptoms and akathesia while trifluoperazine induced more drowsiness. Both intramuscular drugs were very well tolerated with respect to local tissue reaction. 2 references. (Author abstract)

000542 Nasrallah, Henry A.; Donnelly, Edward F.; Bigelow, Llewellyn B.; Rivera-Calimlim, Leonor; Rogol, Alan; Potkin, Steven; Rauscher, Frederick P. Lab. of Clinical Psychopharmacology, St. Elizabeths Hospital, 2700 Martin Luther King, Jr. Ave., Washington, DC 20032 **Inhibition of dopamine synthesis in chronic schizophrenia: clinical ineffectiveness of metyrosine.** Archives of General Psychiatry. 34(6):649-655, 1977.

As a clinical test of the hypothesis that there is a functional excess of dopaminergic activity within unspecified areas of the brain in schizophrenic patients, metyrosine was administered for 3 weeks to symptomatic chronic male schizophrenic patients maintained on suboptimal doses of neuroleptic agents. No clinical improvement was observed, using the NIMH Inpatient Behavioral Rating Scale or the Brief Psychiatric Rating Scale. Central inhibition of dopamine (DA) synthesis by metyrosine was suggested by the development of extrapyramidal side-effects and by a significant increase in plasma prolactin concentrations. Plasma chlorpromazine concentrations remained unchanged during metyrosine treatment. There was a significant improvement on the scores of the WISC subtest which measures judgment and commonsense, suggesting that DA may be involved in the regulation of subtle psychological processes. The results are discussed in light of the DA hypothesis of schizophrenia and previous reports suggesting that metyrosine potentiates the antipsychotic effect of neuroleptics in schizophrenia. 58 references. (Author abstract modified)

000543 Reches, Avinoam; Ebstein, Richard P.; Belmaker, Robert H. Jerusalem Mental Health Center, Ezrath Nashim, Jerusalem, Israel **d-Amphetamine inhibition of platelet MAO from schizophrenic patients.** Biological Psychiatry. 12(5):655-659, 1977.

A study of d-amphetamine inhibition of platelet monoamine oxidase (MAO) from schizophrenic patients is presented. Data analysis of platelet MAO from patients with chronic and recurrent disorders with hallucinations or delusions suggests a four-fold variation in sensitivity to d-amphetamine inhibition. Results indicate that no significant differences between schizophrenic patients and normals in the susceptibility of platelet MAO to inhibition by d-amphetamine was found. It is suggested that some other aspect of the interaction between the biochemistry of amphetamine and the constitution of the schizophrenic patient must be responsible for the schizophrenic patient's sensitivity to amphetamine. 31 references.

000544 Rifkin, Arthur; Quitkin, Frederic; Klein, Donald F. New York State Psychiatric Institute, 722 W. 168th St., New York, NY 10032 **Fluphenazine decanoate, oral fluphenazine, and placebo in treatment of remitted schizophrenics: II. Rating scale data.** Archives of General Psychiatry. 34(10):1215-1219, 1977.

The effectiveness of fluphenazine decanoate and oral fluphenazine in preventing relapse of psychotic symptoms in 73 remitted schizophrenics was investigated. The patients received medication or placebos in a double-blind experiment lasting 1 year. Comparison of rating scale data supported the conclusions that: 1) active medications are more effective than placebos; and 2) patients receiving fluphenazine decanoate have a high incidence of akinesia. 7 references.

000545 Rifkin, Arthur; Quitkin, Fredric; Rabiner, Charles J.; Klein, Donald F. New York State Psychiatric Institute, 722 West 168th Street, New York, NY 10032 **Fluphenazine decanoate, fluphenazine hydrochloride given orally, and placebo in remitted schizophrenics: I. relapse rates after one year.** Archives of General Psychiatry. 34(1):43-47, 1977.

Fluphenazine decanoate, oral fluphenazine HCl, and placebo were compared in 73 remitted schizophrenic inpatients or day patients attending an aftercare clinic. Patients ranged in age from 17 to 38 years, about 2/3 were male, and the number of previous schizophrenic episodes ranged from 1 to 4. Administration of drugs was double-blind, with all patients receiving biweekly injections and pills. Generally, the highest tolerated dose of fluphenazine was used, and all patients also received procyclidine or placebo procyclidine. The study lasted 1 year. The relapse rate was 68% for the placebo patients, compared with 10% of the drug treated patients. Toxicity developed in 35% of patients receiving fluphenazine decanoate (akinesia in all cases) and only 7% of patients receiving oral fluphenazine (no akinesia). It is concluded that remitted chronic schizophrenics should receive prophylactic antipsychotic medi-

cation for at least 1 year after remission. It is suggested that longer-term prospective antipsychotic studies of fluphenazine decanoate at lower doses would be desirable. 16 references.

000546 Schulz, Hans-Dietrich; Kluge, Horst-Hagen; Korda, Wolfgang; Kube, Barbara. Nervenklinik, Fehrbelliner Str. 38, DDR-1950 Neuruppin, Germany **/Treatment of schizophrenic psychoses with Lyorodin./** Die Behandlung mit Lyorodin bei schizophrenen Psychosen. Psychiatrie, Neurologie und medizinische Psychologie (Leipzig). 29(6):360-366, 1977.

The efficacy of fluphenazine (Lyorodin) was tested in schizophrenic psychoses. The random clinical sample consisted of 44 patients with acute and chronic schizophrenic psychoses. An attempt was made to establish criteria for fluphenazine therapy by observing symptom modifications over a 3-month period using the Lorr scale (IMPS). The most pronounced improvement was seen in patients manifesting megalomania, delusions of grandeur, apathy, or depression. Chronic patients showed an antiautistic effect. The effective dosage ranged from 6 to 12mg/day. Tolerance was favorable. Most cases required administration of anti-Parkinson agents. Minor improvement, pronounced improvement, and remissions were observed in 28 cases (64%). 16 references.

000547 Seeman, Philip. Pharmacology Department, Medical Sciences Building, University of Toronto, Toronto M5S 1A8, Canada **Anti-schizophrenic drugs -- membrane receptor sites of action.** Biochemical Pharmacology (Oxford). 26(19):1741-1748, 1977.

The pharamacological properties of the different reported sites of neuroleptic action are compared in an attempt to determine which of these might be of particular significance in the clinical action of neuroleptic drugs. Such a pharmacological strategy (the neuroleptic receptor approach) is contrasted with psychosis exacerbation strategies and with biochemical approach to schizophrenia. Although the neuroleptic drugs may provide a strategy for locating the schizophrenogenic sites in the human brain, there are a number of methodological pitfalls. The drugs are highly membrane soluble and thus, nonspecifically bind to many sites. 102 references.

000548 Small, Joyce G.; Kellams, Jeffrey J.; Milstein, Victor; Klapper, Marietta; Lemberger, Louis. Dept. of Psychiatry, Larue D. Carter Memorial Hospital, Indiana University School of Medicine, Indianapolis, IN 46202 **Effects of lergotrile on schizophrenia and drug induced parkinsonism.** Communications in Psychopharmacology. 1(5):461-467, 1977.

The effects of lergotrile mesylate, a prolactin inhibitor, upon psychotic manifestations and extrapyramidal side-effects were evaluated in 5 female schizophrenic patients. Substitution of lergotrile for the control of side-effects was associated with clinical worsening and akathisia. The study was terminated for ethical reasons. It was concluded that before considering further human trials with lergotrile in schizophrenic patients, further animal experiments to determine the mechanisms by which lergotile effects its actions are necessary. 10 references. (Author abstract modified)

000549 Spohn, Herbert E.; Lacoursiere, Roy B.; Thompson, Karen; Coyne, Lolafaye. Menninger Foundation, Box 829, Topeka, KS 66601 **Phenothiazine effects on psychological and psychophysiological dysfunction in chronic schizophrenics.** Archives of General Psychiatry. 34(6)633-644, 1977.

The effects of phenothiazine treatment on attentional/perceptual, cognitive, and psychophysiological dysfunction in chronic schizophrenics were studied. Under double-blind conditions, 20 patients receiving chlorpromazine and 20 receiving placebo for 8 weeks were tested by performance measures, clinically rated, and monitored for skin resistance and heartrate on four occasions. It was found that phenothiazine effects on measures of attention/perception and on psychophysiological response were demonstrable, but not on tests and ratings of cognitive dysfunction. The direction of effects was toward normalization of function. The results are discussed in terms of their implications for hypothesized behavioral mechanisms of drug action, primary behavioral site of drug action, therapeutic response measurement, and functional theories of schizophrenic psychopathology. 52 references. (Author abstract modified)

000550 Tyrer, P. J.; Schiff, A. A. Southampton General Hospital, Southampton SO9 4XY, England **Propranolol in schizophrenia.** Lancet (London). No. 8041:761-762, 1977.

Methodological critiques of the Yorkston et al study (1977) of the efficacy of propranolol in the treatment of schizophrenia are presented in two letters to the editor. It is suggested that design of the study does not necessarily indicate antischizophrenic activity of propranolol as: 1) the double-blind nature of the design may have been defeated by the inclusion of pulse and blood pressure data of the subjects thereby possibly identifying the propranolol recipients and influencing assessment and management practices; 2) simultaneous prescription of major tranquilizers obscures test results and complicates interpretation of propranolol action; and 3) patient profile data suggests that patients in the placebo group may have been significantly more chronic than those in the propranolol group. 2 references.

000551 van Praag, H. M. Department of Biological Psychiatry, Psychiatric University Clinic, Groningen, The Netherlands **The predictive value of the biochemical action profile of neuroleptics.** In: van Praag, H., Depression and schizophrenia. New York, Spectrum, 1977. 260 p. (p. 227-230).

Two studies investigating the predictive value of the biochemical action profile of neuroleptic drugs are described and discussed. In one study, the efficacy of chlorpromazine, which reduces both dopaminergic transmission and noradrenergic transmission, was compared with that of oxypertine, which reduces primarily noradrenergic transmission. Chlorpromazine was superior to oxypertine in overall therapeutic effect, especially in its influence on delusions and hallucinations. Chlorpromazine also exerted a favorable influence on motor unrest and anxious tension, whereas oxypertine was found to be capable of inducing these symptoms. Oxypertine improved the clinical condition of inert patients with motor retardation but worsened the clinical condition of anxious, agitated patients. It was also found that chlorpromazine exerted a significantly stronger influence on the extrapyramidal system than oxypertine. In the second study, the therapeutic efficacy of clozapine, which is thought to be a strong inhibitor of noradrenergic transmission and a weak inhibitor of dopaminergic transmission, was compared to that of perphenazine, which is a strong inhibitor of DA transmission and a weak inhibitor of NA transmission. The expectation that perphenazine could be superior to clozapine in antipsychotic effect but inferior as a sedative was confirmed. It is proposed that the anti-NA activity of a neuroleptic determines its sedative efficacy, and the anti-DA activity its antipsychotic activity. It is posited that classification of neuroleptics on the basis of their ratio of DA to NA receptor blocking activity is a better predictor of clinical effectiveness than is classification according to chemical structure.

000552 Volavka, J.; Mallya, A.; Baig, S.; Perez-Cruet, J. Department of Psychiatry, University of Missouri, St. Louis, MO 63139 **Naloxone in chronic schizophrenia.** Science. 196(4295):1227-1228, 1977.

To determine the therapeutic effect of the narcotic antagonist naloxone in schizophrenic hallucinations, seven chronic schizophrenic inpatients with frequent auditory hallucinations were administered either naloxone or a placebo intravenously in addition to other antipsychotic medication. Subjects were interviewed and rated using a modified Brief Psychiatric Rating Scale immediately before injection and at intervals from 5 minutes to 24 hours following injection. No average difference between naloxone and placebo was found in this group. Two subjects reported reduction of hallucinations following placebo, and two reported reductions following naloxone. A further injection of naloxone in the two responders, however, had no effect on hallucinations or global pathology. Differences in methodology may account for the failure to replicate earlier results. 6 references.

000553 Woggon, B.; Franke, A.; Hucker, H.; Ruether, E.; Athen, D.; Angst, J.; Hippius, H. Psychiatric University Clinic Zurich, Medical School, Department of Psychiatry, CH-8000 Zurich, Switzerland **Antipsychotic effects, side effects and effective dosis of the butyrophenone lenperone (AHR 2277).** International Pharmacopsychiatry (Basel). 12(2):113-126, 1977.

In three open studies with lenperone, 50 hospitalized schizophrenic patients were treated 20 to 30 days with 30mg to 50mg/day. The highest daily dosage was 90mg. Patients were examined on fixed observation days and the findings were documented by means of the AMP system. AMP data were analyzed at symptom and syndrome level and compared by analysis of covariance. In the described dosage lenperone acted as a mildly sedating, strongly antipsychotic agent and caused only a few single extrapyramidal and slight autonomic side-effects. The dosage is limited because of the effect on heart and blood circulation. Lenperone produced good improvement of depressive symptoms in the schizophrenic patients, and showed rapid onset of antipsychotic effect, with steady improvement of productive schizophrenic symptoms. It is suggested that for better knowledge of the profile of effects of lenperone, a trial in depressive paranoid syndromes, for example in schizoaffective psychoses, would be interesting; a double-blind trial in comparison to a well known antipsychotic substance would be very useful. 14 references. (Journal abstract modified)

000554 Yorkston, Neil J.; Gruzelier, John H.; Zaki, Saniha A.; Hollander, Doris; Pitcher, David R.; Sergeant, Howard G. S. Friern Hospital, London, England **Propranolol as an adjunct to the treatment of schizophrenia.** Lancet (London). 2(8038):575-578, 1977.

The addition of propranolol, in a control study plan, to the practical management of patients with chronic schizophrenia whose florid symptoms had not remitted with major tranquilizers is reported. Fourteen patients who had received an average of 954mg per day of chlorpromazine for 10 years were given, in addition, either propranolol or a placebo for 12 weeks. Both groups had improved by the twelfth week, but the propranolol group showed significantly more improvement. Neurophysiological data obtained in the propranolol treated schizophrenics suggests that propranolol may have central effects on the complex processes of emotion and information. 20 references. (Author abstract modified)

09 DRUG TRIALS IN AFFECTIVE DISORDERS

000555 Aberg, Anna; Holmberg, Gunnar. Psychiatric Unit, Danderyd Hospital, S-182 03 Danderyd 3, Sweden **Controlled trial of a new antidepressive, amoxapine, in comparison with amitriptyline.** Current Therapeutic Research. 22(2):304-315, 1977.

A new antidepressive agent, amoxapine, which is a norepinephrine uptake inhibitor, was compared with amitriptyline in equal dosage in a double-blind randomized study on 29 + 29 primary depressed inpatients. Amoxapine, which has in preliminary studies shown antidepressive properties and a few side-effects, reduced all depressive symptoms to a highly significant degree, while side-effects were scarce and unimportant. In the dosage employed (mean 120mg/day for both drugs) amitriptyline gave somewhat better results than amoxapine, and towards the end of the study the difference was significant on several variables. However, sweating and anticholinergic side-effects were significantly more common with amitriptyline, as was abnormal increase in alkaline phosphates. Sedation also seemed stronger with amitriptyline. It should be possible to obtain better effect by increasing the dose of amoxapine, without more distressing side-effects. This drug may be of particular value in specific types of depression. Further clinical and biochemical studies are recommended. 10 references. (Author abstract)

000556 Asano, Hiroshi; Satomi, Ryuta, Saito, Yoshiro; Fujieda, Toshigi; Ogushi, Shin; Kon, Yu; Yamashita, Kaku; Okamoto, Yasuo; Onodera, Yukio. Department of Neuropsychiatry, Hokkaido University, Japan **The blood (serum and corpuscle) dynamics of tricyclic antidepressants.** Psychiatria et Neurologia Japonica (Tokyo). 79(1):37, 1977.

In a paper read at the 49th Symposium of Hokkaido Neuropsychiatrists held in July 1976 at Sapporo, Japan, the results of measurements of unchanged and demethyl forms of the tricyclic antidepressants, amitriptyline and nortriptyline, in the serum and blood corpuscles of depressed patients are reported. In the cases of amitriptyline administration, both amitriptyline and nortriptyline are detected in the serum and corpuscle components, but when nortriptyline is administered, only that substance can be detected. There was a direct relationship between dosage and concentration of amitriptyline and nortriptyline in the serum, but no stable corpuscular values for amitriptyline could be found to be dose related. The ratio of demethyl to unchanged tricyclic depressants in the corpuscles was much higher than the same ratio in the blood serum.

000557 Avery, David; Winokur, George. Palo Alto Veterans Administration Hospital, Palo Alto, CA 94305 **The efficacy of electroconvulsive therapy and antidepressants in depression.** Biological Psychiatry. 12(4):507-523, 1977.

Electroconvulsive therapy, antidepressants, and neither treatment were compared by reviewing 609 hospitalizations for depression from 1959 to 1969. The groups receiving electroconvulsive therapy included a significantly greater percentage of patients who had marked improvement or a complete response (49%) than either adequate or inadequate antidepressant therapy groups (27%) or the group which received neither electroconvulsive therapy nor antidepressants (25%). If antidepressant failures who required electroconvulsive therapy are included in the evaluation, the percentage of total improvement with electroconvulsive therapy (90%) is significantly greater than the adequate (74%) or inadequate (60%) antidepressant groups, or neither treatment (60%). At the end of

7 weeks of hospitalization, 74% of the electroconvulsive therapy group had been discharged, significantly more than the adequate antidepressant group, 54%. Delusional depressed patients responded much more frequently to electroconvulsive therapy. 31 references. (Author abstract modified)

000558 Ban, Thomas A. Vanderbilt University, Nashville, TN 37203 **Perspectives in biological psychiatry. Part 2: affective disorders.** Psychosomatics. 18(3):59-63, 1977.

In the second of two articles dealing with perspectives in biological psychiatry, possible future changes in the concepts of affective disorders are discussed. Research supporting the hypothesis that bipolar and unipolar affective disorders can be separated on the basis of heredofamilial factors is reviewed. Additionally, hypotheses relating to the action mechanism of lithium in bipolar affective psychoses are reviewed in regard to catecholamine mediation and chromosome breaks. Also reviewed are studies of drugs that increase free norepinephrine concentration in the brain to produce an increase in self-stimulation, associated with an increase in integrated motor behavior, and those drugs that decrease brain serotonin concentrations in relation to mood states.

000559 Braden, William. Butler Hospital, 345 Blackstone Blvd., Providence, RI 02906 **Response to lithium in a case of L-dopa-induced psychosis.** American Journal of Psychiatry. 134(7):808-809, 1977.

A case study of L-dopa induced psychosis that responded to lithium carbonate treatment is reported. A 64-year-old man had been receiving L-dopa treatment for Parkinson's disease, which gradually made him psychotic and dangerous to his family. Lithium carbonate combined with L-dopa controlled his manic and paranoid outbursts. Possible reasons for the reaction between lithium and L-dopa are suggested. 5 references.

000560 Cohn, Cal K.; Wright, James R., III; DeVaul, Richard A. Department of Psychiatry, University of Texas Medical School at Houston, Houston, TX 77030 **Post head trauma syndrome in an adolescent treated with lithium carbonate -- case report.** Diseases of the Nervous System. 38(8):630-631, 1977.

A case study of posthead trauma syndrome in an adolescent treated with lithium carbonate is reported. A 12-year-old Black male sustained head trauma, following which he developed agitated hypomanic behavior. After failure to respond to several treatment modalities, lithium carbonate was administered for 6 months. At this time the medication was discontinued without recurrence of pathological behavior. 14 references. (Author abstract modified)

000561 Coppen, Alec; Ghose, Karabi; Rao, V. A. Rama; Peet, Malcolm. MRC Neuropsychiatry Laboratory, West Park Hospital, Epsom, Surrey, England **Mianserin in the prophylactic treatment of bipolar affective illness.** International Pharmacopsychiatry (Basel). 12(2):95-99, 1977.

The efficacy of mianserin as a prophylactic drug in bipolar affective disorders was tested. Mianserin in a dosage of 20mg t.i.d. was given to 13 patients who previously had been maintained on lithium. Three patients left the trial at their own request within a few days, due to drowsiness in two cases and insomnia in the third. Of the remaining 10 patients, 6 became manic within the 3 month trial period. This result indicates that mianserin may be capable of precipitating mania in susceptible subjects with bipolar affective illness. This may be a general property of antidepressants, since it has been previously described with other groups of antidepressants. 14 references. (Journal abstract modified)

000562 Davenport, Yolande B.; Ebert, Michael H.; Adland, Marvin L.; Goodwin, Frederick K. Section on Psychiatry, LCS/NIMH, 9000 Rockville Pike, Clinical Center, Bethesda, MD 20014 **Couples group therapy as an adjunct to lithium maintenance of the manic patient.** American Journal of Orthopsychiatry. 47(3):495-502, 1977.

To determine the effectiveness of couples therapy groups in conjunction with lithium in the long-term management of married manic-depressive patients, 65 bipolar patients, originally admitted to a NIMH research ward were followed up after discharge for periods ranging from 2 to 10 years. To evaluate the relationship between outcome and type of treatment, the patients were divided into groups according to whether they had received medication management only following the index hospitalization, or had been referred back to their home community for care. Outcome in these patients was compared to patients who received both medication management and weekly couples group psychotherapy. Results indicate that among bipolar patients on lithium, those in couples group therapy had more benign posthospital course than those given minimal support beyond medication. In regard to the structure of the couples groups, specific therapeutic advantages are discussed, including: 1) spouse involvement; 2) diffusion of transference; 3) group support; 4) mutual sensitivity to permit quicker intervention; and 5) group cohesiveness. 16 references.

000563 Davies, Brian; Joshua, Stephen; Burrows, Graham; Poynton, Carol. Department of Psychiatry, Clinical Sciences Building, Royal Melbourne Hospital, Victoria 3050, Australia **A sequential trial of viloxazine (Vivalan) and imipramine in moderately depressed patients.** Medical Journal of Australia (Glebe). 1(15):521-522, 1977.

A study compared viloxazine (Vivalan) and imipramine in a group of depressed patients, matched for age, sex, initial severity of depression and number of previous episodes of effective illness. Eleven pairs of patients were randomly assigned to 4 weeks' treatment with either viloxazine (100mg t.i.d.)or imipramine (50mg t.i.d.). Both treatments resulted in significant reductions in scores on depression rating scales. There was no difference in antidepressant effects of viloxazine and imipramine in the dosages used over 4 week period. Complaints of side-effects, however, were significantly fewer with viloxazine. (Journal abstract modified)

000564 Dunner, David L.; Heiber, Sofia; Perel, James M. New York State Psychiatric Institute, 722 West 168th St., New York, NY 10032 **The effect of l-tryptophan administration on the concentration of probenecid in plasma and cerebrospinal fluid in patients.** Psychopharmacology (Berlin). 53(3):305-308, 1977.

The effect of the administration of large doses of l-tryptophan on probenecid concentrations in cerebral spinal fluid and blood plasma of depressed patients was studied. L-tryptophan and a placebo were administered in a double-blind manner to eight volunteers being treated during the depressed phase of a primary affective disorder. During L-tryptophan treatment, plasma probenecid concentrations were reduced but no significant alterations in cerebrospinal fluid probenecid concentrations occurred. This would suggest that the kinetics of the probenecid blockade of transport of acidic biogenic amine metabolites out of cerebrospinal fluid are not altered by L-tryptophan loading. 23 references. (Author abstract modified)

000565 Gershon, Samuel. Neuropsychopharmacology Research Unit, New York University Medical Ctr., Bldg. 550, First Avenue, New York, NY 10016 **The impact of lithium on the treatment of manic-depressive disorders.** In: NIMH, Research on disorders of the mind: progress & prospects. Rockville, MD, NIMH, 1977. 54 p. (p. 22-23).

A condensed version of a paper delivered at the 100th meeting of the National Advisory Mental Health Council on the impact of lithium on the treatment of manic-depressive disorder is presented. The significant characteristics of lithium for the patient and his family are noted, in particular, its ability to prevent repeated manic-depressive episodes. Lithium is also noted for its minimal side-effects and for evidence which suggests it attacks the disease as well as the symptom. Areas of depression which need further attention, such as depression in the elderly, are discussed.

000566 Gerstenzang, Martin L.; Krulisky, Thomas V. E. J. Meyer Memorial Hospital, 462 Grider Street, Buffalo, NY 14215 **Parenteral haloperidol in psychiatric emergencies: double-blind comparison with chlorpromazine.** Diseases of the Nervous System. 38(8):581-583, 1977.

To assess the relative efficacy of haloperidol, a double-blind study was undertaken comparing it with parenteral chlorpromazine in 58 patients brought to the emergency room for disruptive behavior. Half the patients who received one injection of haloperidol were calmed, cooperative and alert, and another fourth were improved. By contrast, only 3 of 28 patients who received chlorpromazine were controlled successfully, and 11 of 28 were partly controlled. Covariant analysis of data from the Brief Psychiatric Rating Scale showed that haloperidol was superior to chlorpromazine in five of the signs and symptoms evaluated, notably hostility and excitement. None of the statistical comparisons favored chlorpromazine. There were no adverse reactions in any of the patients. Results of this study and of work reported elsewhere indicate that haloperidol is the drug of choice for the control of disruptive symptoms and signs of psychosis in patients who require emergency treatment with an antipsychotic agent. 6 references. (Author abstract modified)

000567 Gram, Lars F.; Reisby, Niels; Ibsen, Ilse; Nagy, Adam; Dencker, Sven J.; Bech, Per; Petersen, Gorm Odden; Christiansen, Johannes. Farmakologisk Institut, Juliane Maries vej 20, DK-2100 Kobenhavn, Denmark **/Plasma concentration and the antidepressant effect of imipramine treatment./** Plasma koncentrationer og antidepressiv effekt ved imipramin behandling. Nordisk Psykiatrisk Tidsskrift (Kungsbacka). 30(7):519, 1977.

The antidepressant effect and plasma levels of imipramine and its metabolite, desipramine, were studied in 24 patients with endogenous depression. Initially a placebo was given for 1 week, and then imipramine was administered until 75mg imipramine was given 3 times a day. The level of depression was evaluated with a Hamilton Rating Scale (HRS). The results show that the plasma levels varied with a factor of 20 to 30. Eleven out of twelve patients with an HRS of less than 8 had a plasma level of imipramine greater than 45 micrograms/l and desipramine greater than 75 micrograms/l. All 12 patients with an HRS greater than 8 had plasma levels over the mentioned limits. 1 reference.

000568 Gupta, A. K.; Mankodi, N. A.; Das, M. M. Medical Dept., Ciba-Geigy of India Limited, Bombay, India **Methodological experience with a double-blind multicentric, monitored clinical trial (MMCT) with Sintamil.** Current Medical Practice (Bombay). 21(1):27-35, 1977.

In an investigation of the comparative efficacy and tolerability of the new tricyclic antidepressant Sintamil, 521 doctors in North and South India treated 2207 patients with either 75mg or 150mg Sintamil daily. The study was also designed to evaluate the role of concomitant therapy, to compare evaluations of responses by psychiatrists and nonpsychiatrists, and to assess differences in yields by different categories of doctors. It is noted that this multicentric, monitored clinical trial (MMCT) was based on the theory that drugs which are to be used in general practice should be assessed in general practice. Results indicate that nonpsychiatrists can contribute reliable data related to comparative dosage evaluation of a tricyclic antidepressant in the treatment of depression in clinical practice. 19 references.

000569 Horowitz, Harvey A. Institute of Pennsylvania Hospital, 111 North 49th Street, Philadelphia, PA 19139 **Lithium and the treatment of adolescent manic depressive illness.** Diseases of the Nervous System. 38(6):480-483, 1977.

Eight cases of adolescent manic-depressive illness and their treatment with lithium are evaluated. The eight psychotic adolescents were admitted with schizophrenic diagnoses and treated initially with neuroleptics. Following failure to respond to neuroleptics, the eight patients were reevaluated and were found to fulfill the diagnostic criteria for primary affective disorder. Treatment with lithium produced clinical remission and reversion to premorbid personality. It is concluded that atypical, behaviorally bizarre, psychotic adolescents who manifest prominent affective elements including lability of mood with elevation, hostility, and depression; hyperactivity; flight of ideas; pressured speech; and distractability, are deserving of and likely to respond to a therapeutic trial of lithium. 15 references.

000570 Jarrett, David B.; Newell, Barbara; Davies, Brian; Coghlan, John P. NIAMDD/DB, Building 10, Room 8S-243, National Institute of Health, Bethesda, MD 20014 **Adenosine 3'5' cyclic monophosphate metabolism in patients with severe depressive illness.** Psychological Medicine (London). 7(1):93-101, 1977.

The daily excretion of adenosine 3'5' cyclic monophosphate (c-AMP) in a group of 19 patients with severe depressive illness was measured in three extracellular compartments using plasma, urine, and lumbar cerebrospinal fluid (CSF) samples. Daily excretion was found to be significantly decreased when compared with that of a group of euthymic patients being treated for other disorders. The daily excretion of the depressed patients increased during the period of treatment and recovery from the illness. Treatment with a tricyclic antidepressant caused a greater increase than the electroconvulsive treatment (ECT). There was no difference between the mean plasma c-AMP concentration of the depressed and euthymic groups. The mean cerebrospinal fluid c-AMP concentration was not different from the mean plasma c-AMP concentration in 12 patients with severe depression. There was no direct correlation between the CSF and plasma concentrations within patients. It was concluded that there may be a reversible disturbance in the renal metabolism of c-AMP in patients with severe depression. 38 references. (Author abstract modified)

000571 Kramer, Helmut; Spring, Gottfried. Case Western Reserve University, Cleveland, OH **A reassessment of tricyclics and E.C.T. in depression.** Diseases of the Nervous System. 38(8):641-643, 1977.

The pattern of use between tricyclics and ECT in the treatment of primary depression during 1974 at University Hospitals of Cleveland was compared. An analysis of patients' charts indicate that the majority of patients with primary depression received much lower than maximally recommended dosages of tricyclics. It is inferred that the rationale for discontinuation of antidepressants is done arbitrarily. It is concluded that additional studies should be conducted to reassess patterns of drug use in depression and that educational programs be implemented to improve the scientific approach to the treatment of depression. 9 references.

000572 Lesse, Stanley. 114 78th Street, New York, NY 10021 **Psychotherapy in combination with antidepressant drugs in patients with severe masked depressions.** American Journal of Psychotherapy. 31(2):185-203, 1977.

In a paper presented at the 12th National Conference of the Association for the Advancement of Psychotherapy, Miami Beach, 1976, a technique for treating patients having severe masked depressions with psychotherapy in combination with antidepressant drugs is described. The frequency and lack of diagnosis of masked depression is noted, and the general clinical characteristics of affected patients are summarized. The initial phase of combined therapy involves treating the patient's physical complaints by supportive sessions and drugs; the goal is to decrease the severity of the depression, alleviate feelings of helplessness, and eliminate suicidal preoccupations. Psychoanalytically oriented sessions follow, and the patient is helped to understand the psychodynamics of his complaints and to examine the underlying maladaptations to the vocational and social environments. It is argued that combined psychotherapy and drug therapy is the treatment of choice with this depressive disorder. 11 references.

000573 Loo, H.; Amic, J. Service du Professeur Deniker, Hopital Sainte-Anne, 1 rue Cabanis, Paris 14, France **/Lithium and emotional disorder./** Lithium et troubles de l'humeur. Perspectives Psychiatriques (Paris). 1(60):13-18, 1977.

The usefulness of lithium salts in treating emotional disorder is discussed. In manic-depressive psychosis lithium may be used for prevention and for treatment in crisis. The action of lithium in preventing thymic dysregulation and its collateral sedative effect make it useful in dysthymic schizophrenia, and its mood stabilizing properties provide for application in controling aggressiveness, alcoholism, premenstrual depression, and psychosomatic disorders. It is suggested that better understanding of the biochemistry of the brain would help in assessing the value of lithium. 61 references.

000574 Molnar, G. McMaster University, Hamilton, Ontario, Canada **Maprotiline -- a double-blind study of a new tetracyclic antidepressant in severe depression.** Canadian Psychiatric Association Journal (Ottawa). 22(1):19-23, 1977.

A double-blind study was carried out comparing the antidepressant properties of maprotiline (a new tetracyclic antidepressant) and amitriptyline. Twenty one hospitalized severely depressed patients, selected on the basis of clinical and psychometric criteria, completed the trial period of 28 days. The new drug was found to have an order of effectiveness similar to that of amitriptyline and both drugs were effective in agitated as well as retarded forms of depression. For both, the day of effect intended as the timing of sharp clinical improvement tended to occur during the second week of treatment. Both drugs were well tolerated by most patients but one of the maprotiline patients presented a generalized rash which resolved after discontinuation of the drug. Maprotiline is seen as an interesting addition to the group of major antidepressant drugs. 8 references. (Author abstract)

000575 Muller, Peter; Heipertz, Rainald. Psychiatrische Klinik der Universitat, Von-Siebold-Str. 5, D-3400 Gottingen, Germany **/Treatment of manic psychosis with clozapine./** Zur Behandlung manischer Psychosen mit Clozapin. Fortschritte der Neurologie, Psychiatrie etc. (Stuttgart). 45(7):420-424, 1977.

The efficacy of clozapine (Leponex) in the treatment of manic psychoses was investigated. Between January 1974 and June 1975, 52 hospitalized patients with mania were treated with clozapine. In half the patients this was the only drug throughout the trial. The drug was considered to be applicable primarily to schizophrenics. The principal effects were observed almost immediately (on the first or second day) and consisted of initial sedation and subsequent improvement of motivation and flight of ideas. On the basis of present experience, clozapine appears to be an effective drug in the treatment of mania, both in its principal effects and side-effects. Patients frequently prefer it due to the absence of extrapyramidal side-effects. On the average, inpatient treatment took less time with clozapine than with other drugs. 23 references. (Journal abstract modified)

000576 Nagy, Adam. Klinik II, Lillhagens sjukhus, S-422 03 Hisings-Backa 3, Sweden **/Plasma levels during treatment with imipramine, clomipramine, and imipramine-N-oxide./** Plasmanivaer under behandling med imipramin, klomipramin och imipramin-N-oxid. Nordisk Psykiatrisk Tidsskrift (Kungsbacka). 30(7):520-521, 1977.

The correlation between plasma levels of imipramine and its metabolite desipramine, and antidepressant effects were studied in 20 depressed patients who were treated twice a day during 3 weeks with 150mg imipramine or clomipramine. The doses were given orally and intramuscularly according to the crossover principle, alternating by the week. Ten patients were also given 225mg imipramine-N-oxide orally daily for 1 week. The ratio of the plasma level of imipramine/desipramine averaged twice as high with intramuscular treatment as compared to oral treatment. In order to decrease the plasma level of the metabolite and increase the plasma level of imipramine, still obtaining the antidepressant effect, the alternating method seemed necessary. 3 references.

000577 Nestoros, J. N.; Ban, T. A.; Lehmann, H. E. McGill University, McIntyre Medical Sciences Bldg., Room 1215, Montreal, Quebec H3G 1 Y6, Canada **WIN 27,147-2 in the treatment of depression: an uncontrolled clinical study.** International Pharmacopsychiatry (Basel). 12(2):86-94, 1977.

An uncontrolled clinical study with WIN-27,147-2 was conducted with 10 hospitalized depressed psychiatric patients. There was statistically significant improvement in the total scores of the HAM-D, BPRS and Zung; in the scores of all the factors of the HAM-D and Zung; in the scores of the anxiety/depression and activation factors of the BPRS, and in the scores of 6 of the 18 items of the BPRS. Judged by clinical global impressions, 9 of the 10 patients were very much improved and 1 patient much improved. The most frequently occurring adverse effects were dry mouth, sweating, drowsiness and insomnia. 8 references. (Journal abstract)

000578 Nies, Alexander; Robinson, Donald S.; Bartlett, Diantha; Lamborn, Kathleen R. Dartmouth Medical School, Hanover, NH **MAO inhibitors in clinical practice: principles based on recent research.** Psychopharmacology Bulletin. 13(1):54-55, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, studies of the effectiveness of phenelzine, a monoamine oxidase (MAO) inhibitor, in the treatment of depression of assessing type of depression, including stratification of patients on the basis of low, intermediate, or high diagnostic index (DI) score and grouping patients by means of mathematical cluster using symptoms from a standard depression interview. Patients showing improvement with phenelzine are predominantly those with low or intermediate DI scores, suggesting that MAO inhibitor treatment is effective in patients with chronic depressive illnesses with a neurotic or reactive symptom picture. Mathematical clustering of patients yielded three groups of patients: 1) a clearly endogenous group; 2) an undeterminate group; and 3) a group resembling depressive neurosis. The latter group responded well to phenelzine, and the endogenous group responded least well. It is concluded that MAO inhibitor therapy is most effective for illnesses that descriptively resemble depressive and anxiety neuroses and those that have been termed affective neuroses, and is ineffective for endogenous depressions. 8 references.

000579 no author. no address **Treatment of depression.** British Medical Journal (London). 2(6095):1105, 1977.

Recent research dealing with pharmacotherapy and electroconvulsive therapy (ECT) in the treatment of depression is briefly summarized. A trial of L-tryptophan indicated that doses of tryptophan over 4g per day may result in activation of tryptophan pyrrolase in the liver and the more rapid and consequently self-defeating degradation of tryptophan: ECT was also found more effective than tryptophan in the treatment of depression. A double-blind trial of ECT indicated that ECT induced marked improvement after two sessions. ECT in rats was found to enhance behavioral responses to 5-hydroxytryptamine and catecholamine receptor stimulation; similar enhancement found with the convulsant inhalant Indoklon and lack of enhancement by subconvulsive shock suggest that ECT may produce its therapeutic action by a change in monoamine receptor response. Review of the biochemical aspects of depression suggests that the indoleamine and catecholamine theories of depression may be compatible. 11 references.

000580 no author. no address **Tricyclic need drops with age.** Medical World News. 18(19):80, 1977.

A report on two controlled studies, made in New England by Alexander Nies, and Donald S. Robinson, supporting the suggestion that elderly patients should get less than customary doses of antidepressants is presented. Imipramine was given to 23 inpatients 27 to 78 years old in daily doses of 150mg for 3 weeks to achieve steady state plasma levels. Results indicate that those over 65 had much higher levels (83.8ng/ml) even though average daily dose was less than two thirds that of younger patients. Similar results were observed in the study conducted at an outpatient depression research clinic where 31 patients aged 21 to 68 received a regimen of amitriptyline. Results of both studies indicate that the metabolic clearance of tricyclic antidepressants such as imipramine and amitriptyline from the blood is slower in the elderly than in younger subjects, thereby justifying smaller than customary doses for the depressed aged.

000581 no author. no address **Up from depression with a synthetic male hormone.** Medical World News. 18(5):64, 1977.

A synthetic male hormone (mesterolone, an oral analogue of testosterone) was investigated in treatment of chronic unipolar depression. Thirteen chronically depressed patients who had not benefited from standard antidepression therapies were studied in an 8 week, double-blind study including evaluations by clinical psychologists. Outpatients received placebos for 1 week, than mesterolone was administered in increasing dosages. Periodic evaluations of the patients included use of the Hamilton rating scale of depression, measurements of blood levels of monoamine oxidase (MAO), sperm counts, and brainwave change in electroencephalographs. Symptoms of depression decreased in 11 patients, plasma MAO levels decreased slightly, and sperm counts remained relatively stable. Results suggest that mesterolone is an effective antidepressant at high dosage levels.

000582 Procci, Warren R. University of Southern California School of Medicine, LAC/USC Medical Center, 1237 North Mission Road, Los Angeles, CA 90033 **Mania during maintenance hemodialysis successfully treated with oral lithium carbonate.** Journal of Nervous and Mental Disease. 164(5):355-358, 1977.

The efficacy of lithium carbonate in the treatment of mania during maintenance hemodialysis was investigated. A 25-year-old maintenance hemodialysis patient suffered an episode of mania. Oral lithium carbonate given as a single 600mg dose following each dialytic treatment sustained serum lithium levels in the 0.6to 0.8mEq/1 range. Clinical remission occurred quickly and was maintained throughout a 6 month follow up period. No significant side-effects were noted. 16 references. (Journal abstract modified)

000583 Randrup, A.; Braestrup, C.; Munkvad, I.; Fog, R.; Scheel-Kruger, J.; Nielsen, M. Sct. Hans Hospital, Roskilde, Denmark **Roles of monoamines, particularly dopamine, in clinical depression and in the regulation of mood.** Brain Research (Amsterdam). 127(2):373-374, 1977.

The role of monoamines, particularly dopamine, in clinical depression and mood regulation was reviewed in a paper presented to the 8th Annual Meeting of the European Brain and Behaviour Society in Copenhagen, August, 1976. The effects of tricyclic antidepressants on uptake mechanisms for noradrenaline and serotonin have inspired hypotheses about associations of these two brain amines with depression. The tricyclics differ, however, very much with respect to these effects, some being strong on noradrenaline, others on serotonin, and recently it was found that the clinically active drugs butriptyline and iprindole lacked both effects or were extremely weak. All the tricyclics, including the two latter, inhibit, however, the uptake of dopamine to about the same extent. Other, new types of antidepressants -- nomifensine, mianserine, maprotiline, FG-4963 -- have also been found to inhibit dopamine uptake. In addition, a considerable amount of other circumstantial pieces of evidence, pharmacological, biochemical, clinical, indicate the involvement of brain dopamine in the pharmacology and perhaps pathogenesis of depression and mania. An extensive review of this evidence has just been published. A relation of brain dopamine to regulation of mood in nonpsychotic persons was indicated by experiments of Gunne and coworkers where euphoria was produced by amphetamine and prevented by dopamine antagonists, but not by noradrenaline antagonists. In these experiments the patients reported their mood by filling out a questionnaire. Changes in brain dopamine cause strong effects on many other types of behavior including locomotion, exploration, eating, several social and emotional behaviors, operant behaviors, etc.;and clinically, besides depression and mania, dopamine also seems to be involved in schizophrenia.

The behavioral effects of changes in brain dopamine are modified by concomitant changes in other brain amines which may contribute to or modify the clinical profile of antidepressive drugs. 6 references. (Author abstract modified)

000584 Renshaw, Domeena C. Loyola University of Chicago, 2160 South First Avenue, Maywood, IL 60153 **Mentally retarded, hyperkinetic, and psychotic.** Diseases of the Nervous System. 38(7):575-576, 1977.

A case of a 20-year-old hyperkinetic, mildly retarded, and psychotic woman's reactions to drug therapy is reported. The patient was hospitalized for an acute psychotic episode when 18 years old; the disorder was characterized by withdrawal and catatonia. Treatment with chlopromazine, thioridazine, thiothixene, trifluoperazine, fluphenazine, haloperidol, and perphenazine each produced undesirable side-effects long before therapeutic effects were obtained, and antiparkinson combinations proved to be of no benefit. Following 15 electrochock treatments (EST) she was able to return home and resume work at a sheltered workshop, and psychotherapy was begun. When 20 years old, following the death of her father, the patient again required hospitalization, this time for self-mutilation and manic symptoms. Lithium carbonate at low doses produced vomiting and tremors without clinical improvement. EST and behavior modification therapy restored acceptable behavior. A third crisis was avoided through the administration of 10mg molindone. Molindone resulted in much improved behavior, without side-effects or toxicity.

000585 Roccatagliata, Giuseppe; Abbruzzese, G.; Albano, C.; Cocito, L.; Gandolfo, C. Clinica delle Malattie Nervose e Mentali dell'Universita di Genova, Via A. De Toni, 5, I-16132 Genova, Italy **Trazodone by intravenous infusion in depressions secondary to organic disease.** International Pharmacopsychiatry (Basel). 12(2):72-79, 1977.

The efficacy of trazodone in countering depression secondary to organic disease was tested. Sixteen patients with organic depression were treated with low doses of trazodone (100mg/day) i.v. This drug was shown to have marked antidepressant and anxiolytic action and did not produce significant side-effects. Judging by the diminished 24 hour urinary excretion of 5-HIAA, trazodone seems to have an antiserotonin action at low doses. 24 references. (Journal abstract modified)

000586 Sacchetti, E.; Bottinelli, S.; Bellodi, L.; Galasso, R.; Smeraldi, F. University of Milan Medical School, Institute of Clinical Psychiatry, I-20122 Milano, Italy **Erythrocyte/plasma lithium ratios.** Lancet (London). No. 8017:908, 1977.

In a letter to the editor, the results of a study on the relationship between erythrocyte/plasma lithium ratios and response to lithium antidepressant therapy are presented. Twenty five patients were followed up between 2 and 4 years after the initiation of treatment. The data suggest a correlation between the factors that regulate the transport of lithium across the cell membranes and the efficacy of lithium maintenance therapy. They also contribute to the concept that depressed patients have a biological heterogeneity which overrides the simple clinical dichotomy between unipolar and bipolar groups. 6 references.

000587 Sainsbury, R. no address **Babies and tranquillisers.** New Zealand Medical Journal (Dunedin). 85(585):293, 1977.

The prescription of valium (diazepam) syrup for infants is criticized. Two cases in which diazepam syrup was prescribed for infants because of the parent's reports of the child's excessive crying are reported. It is suggested that the use of diazepam for such flimsy indications is unjustified; and the need for a syrup form for very young children is questioned.

000588 Simpson, George M.; Voitashevsky, Alexander; Young, Michael A.; Lee, J. Hillary. Rockland Research Institute, Orangeburg, NY 10962 **Deanol in the treatment of tardive dyskinesia.** Psychopharmacology (Berlin). 52(3):257-261, 1977.

The efficacy of deanol as compared to placebo in treating the symptoms of tardive dyskinesia was studied in a double-blind crossover trial in 10 hospitalized chronic psychotic patients. No psychotropic agents were administered during the trial. Improvement occurred in 10 of 26 items of Simpson's Tardive Dyskinesia Rating Scale and the total score during the 1st treatment phase regardless of which drug the patients received; 7 patients were on deanol and 3 on placebo during this time. Most of the decline occurred in the Facial symptoms; the Extremities scores decreased only slightly. The fact that all of the placebo group had received neuroleptics prior to the trial compared to 2/7 of the deanol patients may be one reason for the decline in symptoms. It was concluded that deanol may have contributed to the decline but that its effect on the disorder was not dramatic. 14 references.

000589 Steiner, M.; Elizur, A.; Davidson, S. Department of Psychiatry, Neuropsychiatric Institute, University of Michigan, 1405 E. Ann Street, Ann Arbor, MI 48109 **A psychosomatic triad in a bipolar patient.** Journal of Nervous and Mental Disease (Baltimore). 164(5):359-361, 1977.

Coincidence of psychosomatic bronchial asthma, peptic ulcer, and seborrheic dermatitis in a bipolar patient is discussed. The patient, a 56-year-old White male, exhibited the triad during a single depressive episode. His history of mother/son symbiosis points to an unresolved oedipus conflict with oral fixation. The disorder was controlled by a combination of nortriptyline and thioridazine. The triple syndrome was also observed during the hypomanic stage, although to a lesser degree. The underlying mechanism is believed to be an imbalance in the cholinergic nervous system. 12 references.

000590 Vogel, H. P.; Benkert, O.; Illig, R.; Muller-Oerlinghausen, B.; Poppenberg, A. Neurologische Klinik und Poliklinik, Klinikum Steglitz, 30 Hindenburgdamm, D-1000 Berlin 45, Germany **Psychoendocrinological and therapeutic effects of TRH in depression.** Acta Psychiatrica Scandanavica (Kobenhavn). 56(3):223-232, 1977.

The antidepressive efficacy of TRH was investigated in 15 endogenous depressive patients in a double-blind crossover design. The Hamilton depression scale, the AMP (PAS) system, v. Zerssen scale and thermometer scales were used. No therapeutic effect could be demonstrated. The blunted TSH response to TRH, which has been described by other investigators, was confirmed. There was suggestive evidence of a psychoendocrinological relationship in the sense that the more severe the "somatic depressive" syndrome as calculated from the AMP system, and the more marked the diurnal variation of the endogenous type is, the lower are the basal TSH values and the smaller the response to TRH. Thus, TRH may become a useful tool to identify subgroups of depressive patient populations. 32 references. (Author abstract)

000591 Wode-Helgodt, Birgitta; Fyro, B.; Gullberg, B.; Sedvall, G. Department of Psychiatry, St. Goran's Hospital, S-112 81 Stockholm, Sweden **Effect of chlorpromazine treatment on**

monoamine metabolite levels in cerebrospinal fluid of psychotic patients. Acta Psychiatrica Scandinavica (Kobenhavn). 56(2):129-142, 1977.

The effect of chlorpromazine (CPZ) treatment on monoamine metabolite levels in cerebrospinal fluid (CSF) of psychotic patients was investigated. Measurements were made before, two, and four weeks after treatment with CPZ which was given randomly in doses of 200, 400, or 600mg per day. Before treatment there were positive correlations between the levels of homovanillic acid (HVA) and 5-hydroxyindoleacetic acid (5-HIAA) in both sexes. During CPZ treatment, HVA was significantly elevated, whereas 4-hydroxy-3-methoxy-phenylethylene glycol (MOPEG) and 5-HIAA were reduced. There was a tendency towards tolerance to CPZ's effect on HVA during treatment but a significant effect persisted after 4 weeks. No indication of tolerance to the effects on MOPEG or 5-HIAA was found. There were the same tendencies for the elevations of the HVA/MOPEG and HVA/5-HIAA ratios. The changes in HVA, MOPEG, 5-HIAA, HVA/MOPEG and HVA/5-HIAA were related to dose of CPZ in men but not in women. The bidirectional change of the different metabolites in CSF during CPZ treatment excludes a general and non-specific mechanism for the metabolite changes. The HVA elevation was in accordance with previous results in animals and man, and is presumably related to blockade of central dopamine receptors. Possible mechanisms for the effects on MOPEG and 5-HIAA are discussed. 49 references. (Author abstract modified)

000592 Zarcone, Vincent P., Jr.; Berger, Philip A.; Brodie, H. Keith H.; Sack, Robert; Barchas, Jack D. Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, Stanford, CA 94305 **The indoleamine hypothesis of depression: an overview and pilot study.** Diseases of the Nervous System. 38(8):646-653, 1977.

Evidence for a specific indoleamine deficiency in depression is reviewed and attempts to correct this suspected deficiency with serotonin precursors is reported. Clinical and biochemical data on six patients with depression treated with L-5-hydroxytryptophan (5-HTP) in a nonrandom double-blind protocol is presented. The oral administration of L-5-HTP was associated with a rise in CSF 5-hydroxy-indoleacetic acid (5-HIAA), but only two of six patients studied had any decrease in depression ratings. 5-HTP was also shown to decrease urinary excretion of 17 hydroxycorticosteroids in two depressed patients and three normal controls suggesting an interrelationship between serotonin metabolism and the pituitary adrenal system. It is suggested that in a postulated subgroup of depressed patients with pituitary adrenal hyperactivity and evidence of serotonin deficiency, L-5-HTP may deserve further trial as an experimental treatment. 55 references. (Author abstract modified)

000593 Ziegler, Vincent E.; Meyer, David A.; Rosen, Samuel H.; Knesevich, John W.; Biggs, John T. Department of Psychiatry, Washington University School of Medicine, 4940 Audubon Avenue, St. Louis, MO 63110 **Amitriptyline dosage schedule, sampling time and tricyclic plasma levels.** British Journal of Psychiatry (London). 131:168-171, 1977.

The effect of two dosage schedules and four sampling times on the tricyclic antidepressant plasma levels in depressed patients being treated with amitriptyline hydrochloride was examined. Plasma levels of amitriptyline and nortriptyline were similar in ten patients following administration of amitriptyline in either three divided doses or as a single daily dose. Maximum comparability was achieved 12 hrs to 16 hrs after the single dose and 3 hrs to 7 hrs after the morning dose on the thrice daily schedule. The results indicate that therapeutic plasma levels can be maintained by a once a day dosage schedule given the long biological half-life of the drug. 13 references. (Author abstract modified)

10 DRUG TRIALS IN NEUROSES

000594 Bloom, Floyd E. Arthur Vining Davis Center for Behavioral Neurobiology, Salk Institute, LaJolla, CA 92037 **Neural mechanisms of benzodiazepine actions.** American Journal of Psychiatry. 134(6):669-672, 1977.

The present status of cell specific effects of benzodiazepines in the brain is critically reviewed, and areas for further research are suggested. Topics examined include: general drug actions; transmitter specific drug actions; and neuronal integration mechanism in cerebellum, spinal cord, and limbic system. Current experimental paradigms emphasize neurotransmitter specific interactions to explain the behavioral effects of benzodiazepines. According to this approach the broad range of effects observed suggests the involvement of several transmitter systems without rigorously establishing that any single transmitter system or physiological synaptic function is either necessary or sufficient to express all benzodiazepine actions. Among the effects that occur, potentiation of amino acid mediated presynaptic inhibition in the spinal cord and postsynaptic inhibitions elsewhere in the brain are attractive testable hypotheses. However, direct physiological evidence that benzodiazepines simulate gamma-aminobutyric acid (GABA) or other amino acids specifically and exclusively is needed to corroborate this view. 34 references. (Author abstract modified)

000595 Elie, Robert; Duguay, R.; Panisset, J. C.; Germain, M.; Gagnon, M. A. Hopital Louis-H. Lafontaine, Institut National de Recherche Scientifique, Inrs-Sante, 7401 Rue Hochelaga, Montreal, P.Q., Canada **Single and divided dose of imipramine.** Current Therapeutic Research (Tenafly). 21(5):725-735, 1977.

Differential effects of single and divided dose of imipramine were assessed. A single daily dosage of imipramine 150mg was found to be more effective than the twice a day, divided administration of the same daily dose in the treatment of female inpatients with endogenous depression. The two dose schedules were compared in two groups of seven subjects and the illness intensity was assessed with the Zung questionnaire and with a self-rating analogic scale. During this 3 week, double-blind experiment, no significant difference in side-effects was observed between the two groups. It is hypothesized that the single daily dose yields a higher imipramine/desipramine ratio in the blood and, as a consequence, a greater effect on the mood of the patients. 32 references. (Author abstract modified)

000596 Floru, Lucian. Rheinisches Landeskrankenhaus, Bergische Landstr. 2, D-4000 Dusseldorf 12, Germany **/Psychiatric and neurological applications of beta-blocking agents./** Die Anwendung beta-blockierender Substanzen in der Psychiatrie und Neurologie. Fortschritte der Neurologie, Psychiatrie etc. (Stuttgart). 45(2):112-127, 1977.

Experience with adrenergic beta-blocking agents in psychotherapeutic and neurological applications is reviewed. Anxiolytic effects of beta-blockers have been utilized successfully in functional cardiac syndrome, hypochondriacal manifestations, and various phobias. Psychotic conditions have not responded uniformly. Results obtained from the treatment

of drug dependence are still inconclusive. Better responses have been seen in the treatment of alcohol withdrawal symptoms with propranolol. Various types of tremor (in alcoholism, Parkinson disease, lithium induced conditions; in essential, peripheral, and senile tremor) have responded favorably, although reports differ. In some cases beta-blockers counteracted the toxic side-effects of neuroleptics and were used successfully in the treatment of migraine. Side-effects of beta-blockers seem to be dose dependent. Sudden withdrawal may lead to cardiovascular crisis. 227 references.

000597 Gmur, M.; Angst, J. Psychiatrische Klinik Hohenegg, Psychotherapiestation, CH-8706 Meilen, Switzerland **/Combination of phenylpyrrolidinopentane (Katovit) with oxazepam (Adumbran): a double-blind trial with opipramol (Insidon) in depressive syndrome./** Kombination von Phenylpyrrolidinopentan (Katovit) mit Oxazepam (Adumbran): ein Wirkungsvergleich im Doppelblindversuch mit Opipramol (Insidon) bei depressiven Syndromen. International Pharmacopsychiatry (Basel). 12(2):100-112, 1977.

A double-blind trial was conducted with depressive outpatients, comparing effects of Z-116-TRK (phenylpyrrolidinopentane and oxazepam) and opipramol. Twenty one patients receiving Z-116-TRK and 19 patients receiving opipramol were examined by means of the AMP system, Hamilton Rating Scale for Depression and the self-rating scales of von Zerssen dealing with subjective feeling and complaints. Examinations of the outpatients were carried out on days 0, 7, 14 and 21. The data of the two groups were evaluated by two-way analysis of covariance. There were small differences between Z-116-TRK and opipramol with regard to antidepressant effect. Z-116-TRK produced improvement of the somatic depressive syndrome and hypochondriasis, and opipramol improved the somatic depressive syndrome and the autonomic syndrome in the AMP test. Both resulted in significant improvement on the Hamilton Rating Scale in the course of treatment. In the general estimation, the effect of Z-116-TRK proved to be sufficient (moderate/good/very good) in 8 of 21 cases (38%), compared to only 3 of 19 cases (15.7%) for opipramol. Neither drug produced significant clinical side-effects. The findings of the AMP and the Hamilton Rating Scale for depression are not confirmed by the self-rating scale "subjective feeling", and only in the opipramol group by the complaint list. This lack of correspondence leads to the conclusion that these self-rating scales are less sensitive and less qualified for measurement of improvement in depressive syndromes in psychopharmacological investigations. 10 references. (Journal abstract modified)

000598 Hafner, Julian; Milton, Frank. Clare House, St. Georges Hospital Medical School, Blackshaw Road, London SW17 0QT, England **The influence of propranolol on the exposure in vivo of agoraphobics.** 7(3):419-425, 1977. Psychological Medicine (London).

To examine the influence of 40mg propranolol on agoraphobics throughout 5 hour periods of exposure in vivo on 3 alternate days, 23 patients were studied using a double-blind parallel design and 19 were followed up for 3 months. The propranolol group spent significantly less time than the placebo group traveling alone in the month after treatment, and had improved significantly less on a measure of general symptoms at 3 months. The adverse influence of propranolol on treatment outcome appeared mainly due to a waning effect in the last hour of exposure. Attempts to measure coping with panics as an independent variable were largely unsuccessful. 7 references. (Author abstract)

000599 Itoh, Hitoshi; Ohtsuka, Nobuo; Kamishima, Kunitoshi; Kaizawa, Shigeo; Miura, Sadanori. School of Medicine, Keio University, Tokyo, Japan **A comparative clinical study for the evaluation of antianxiety agents, (lorazepam, diazepam and placebo), in neurosis.** Folia Psychiatrica et Neurologica Japonica (Tokyo). 31(1):25-36, 1977.

The clinical effects of lorazepam on neurosis were evaluated in double-blind, controlled group comparison procedure using diazepam and placebo as control drugs. Clinical improvement and aggravation rates by means of a variety of assessment of change were compared between each of the two active drugs and placebo. The superiority, characteristics of therapeutic effects, and minor side-effects of lorazepam, which are similar to those of diazepam, were demonstrated. In this study, many important problems which might influence the outcome of the pharmacotherapy on neurotics, such as positive and negative placebo effects, aggravation, and dropout during the trial, were also evaluated. 8 references. (Author abstract modified)

000600 Jinks, Martin. Professional Health Research, Inc., Burlingame, CA **Current therapeutic concepts: contemporary drugs in the management of anxiety.** Journal of the American Pharmaceutical Association. 17(5):287-291, 1977.

Therapeutic liberalism versus therapeutic nihilism in the pharmacotherapy of anxiety and the use of benzodiazepines in the treatment of this condition is discussed. It is posited that although the benzodiazepines offer several advantages over other drug groups, they may cause physical dependence after prolonged use, and their misuse may lead to acute intoxication and death. Since benzodiazepines may produce congenital anomalies, their use in women of childbearing age should be minimized. It is further suggested that therapy with benzodiazepines should be reserved as an adjunct to psychotherapy in patients with true pathological anxiety and that therapy should be episodic and intermittent with individualized dosage. It is concluded that because no one drug group is superior to another in the treatment of anxiety, choice involves a consideration of length of therapy, drug safety, drug interaction, and drug cost. 26 references. (Author abstract modified)

000601 Khristozov, Khr.; Stambolova, Sv.; Nikolova, Sl.; Kostova, R. no address **/Lithium prophylaxis in the treatment of cyclothymia in teenagers./** Litieva profilaktika na tsiklofreniya u yunoshi. Nevrologiya, Psikhiatriya i Nevrokhirurgiya (Sofiya). 16(2):89-93, 1977.

Lithium prophylaxis in the treatment of cyclothymia was investigated in 18 patients, aged 11 to 18, with manic-depressive psychosis. In 14 patients the first attack of the disease was observed, represented by the melancholic phase, with alternating type of development. Ten patients were given lithium salt prophylaxis; five showed the alternating type of manic depression, three the circular type, and two the periodic type. Age 14 was the earliest age at which lithium was used. Side-effects were rather moderate. Clinical and catamnestic followup revealed an unquestionably positive effect: seven patients had prolonged remission, and in three patients the manic-depressive phases were shortened. The control group of eight patients treated with classical methods showed lesser improvement: manic-depressive phases were longer and a prolonged remission occurred in only two cases. 16 references. (Journal abstract modified)

000602 Kikuchi, Takenori; Ishikawa, Hitoshi; Morito, Tadao; Kumura, Fusaji; Koro, Tsuneo. Dept. of Psychosomatic Medicine, Tokyo University, Branch Hospital, Mejirodai 3-28-

6, Bunkyo-ku, Tokyo 112, Japan **A case of acute gastric dilatation in anorexia nervosa.** Japanese Journal of Psychosomatic Medicine (Tokyo). 17(2):130-133, 1977.

A case of a 21-year-old woman with anorexia nervosa and acute gastric dilatation is reported. Since 17, she had repeatedly overeaten and vomited and her weight had fallen from 52kg to 32kg. Psychological examination revealed a hysterical neurosis (dissociation reaction type). She improved in 3 months without any special therapy; however, after discharge her symptoms soon reappeared. At this time, an abdominal X-ray confirmed the presence of an acute gastric dilatation just before her vomiting occurred. Brief treatment with a major tranquilizer proved sufficient to manage her condition. 5 references. (Author abstract modified)

000603 Lader, M. Institute of Psychiatry, University of London, London SE5 8AF, England **Antianxiety drugs: clinical pharmacology and therapeutic use.** Current Therapeutics (Milford). 18(3):89, 91, 94-96, 99, 101, 103, 105-106, 1977.

The major groups of anxiolytic drugs are discussed with particular emphasis on their relative effectiveness and toxicity. Major groups discussed are: barbiturates, propanediols, benzodiazepines, phenothiazines, antipsychotics, tricyclic antidepressants, monoamine oxidase inhibitors, alcohol, hypnotics, and the beta-adrenoreceptor blocking drugs. Pharmacokinetics, drug interactions, contraindications, tolerance, and effectiveness for these groups are reviewed. The efficacy of the benzodiazepines over the barbiturates is discussed. Benzodiazepines are recommended for the initial treatment of anxiety, and may be used in combination with beta-adrenoreceptor blocking agents in cases of pronounced somatic symptoms. Amylobarbitone sodium administered intravenously is suggested for severe panic and anxiety reactions.

000604 Laudano, Oscar; Peralta, Mirta; Lujan, Leonel; Aparicio, Nestor; Moizeszowicz, Julio. Department of Medicine, Rosario University School of Medicine, Hospital Centenario, Rosario, Argentina **Effect of a new benzodiazepine derivate, clobazam, in anxious patients with gastrointestinal disorders.** Journal of Clinical Pharmacology. 17(7):441-446, 1977.

Thirty four anxious patients with gastrointestinal disorders were studied to evaluate the effectivenss of a new 1,5-benzodiazepine antianxiety agent (HR 376). The disorders were classified as organic or functional according to the presence or absence of radiologic signs of ulcer. Dietetic measures, gastric antacids, anticholinergic agents, and antianxiety treatment were applied for 6 weeks. Anxiolytic treatment consisted of 30mg/day clobazam (HR 376) or 15mg/day diazepam, given in a randomized, double-blind manner. Clinical followup was performed with the PEN Personality Inventory (PEN), Taylor Manifest Anxiety Scale (TMAS), Hamilton Anxiety Scale (HAS), and Wittenborn Psychiatric Rating Scales (WPRS). The score of the psychoticism dimension of the PEN inventory was significantly higher in organic than in functional patients. Significant differences occurred in the reduction of the rating scores of HAS and WPRS before/after treatment in the clobazam and diazepam groups. This would express a modification of state anxiety. The TMAS, which evaluates trait anxiety, disclosed statistically significant improvement in the clobazam group. This group showed an early reduction of the HAS and TMAS scores, which would suggest an early onset of action. 12 references. (Author abstract)

000605 McGhie, R. L.; O'Hara, H.; O'Hara, J.; Brodie, N. H.; Dunckley, H. G.; Schiff, A. A. no address **Anxiety states in family practice: an evaluation of the need for antidepressant as well as anxiolytic therapy.** Journal of International Medical Research (Northampton). 5(5):354-358, 1977.

To evaluate the need for antidepressant as well as anxiolytic therapy in the treatment of anxiety states, 48 patients attending their family practitioner with emotional disturbance manifesting predominantly as anxiety were treated once daily for 4 weeks with either a pure anxiolytic, potassium clorazepate, or a formulation of a specific antidepressant together with an anxiolytic, fluphenazine/nortriptyline, in accordance with a double-blind, completely randomized design. After the first week the patients receiving fluphenazine/nortiptyline were showing a better response in terms of total symptomatology as well as anxiety, tension and depression taken separately, and after 4 weeks treatment this trend reached statistically significant levels on both the physicians' ratings and the patients' self-ratings for overall symptomatology as well as anxiety and tension on the physicians' scale. The results are considered in accord with accumulating evidence for the importance of a depressive etiology underlying the majority of so called anxiety states in family practice. Anxiolytic, in the absence of specific antidepressant, therapy is unlikely to be adequate for these patients, and may lead to long-term palliative use of benzodiazepines incurring a risk of dependence. 18 references. (Author abstract modified)

000606 no author. no address **Treating the headache by treating the depression.** Practical Psychology for Physicians. 4(7):9, 13-17, 21, 1977.

An interview with Seymour Diamond of the Diamond Headache Clinic is presented, focusing on various headache treatment modalities. It is noted that 90% of all headaches are diagnosed as psychogenic -- related to depression, anxiety, and psychiatric symptoms. Treating the headache by treating the depression is discussed, emphasizing the use of a combination therapy or MAO inhibitors and tricylics, or the use of biofeedback. The use of psychotherapy in the treatment of headache is reviewed, and the necessity of a positive therapist attitude is underlined. It is concluded that the therapist/doctor must adopt a systematic approach to the treatment of headache, based on an accurate diagnosis and an appropriate treatment strategy.

000607 Obermair, W.; Poldinger, W. Firma Merck, Klinische Forschung, Frankfurterstr. 250, D-6100 Darmstadt 1, Germany **/Double-blind trials of a new tricyclic antidepressant (lofepramin) and a tetracyclic antidepressant (maprotiline)./** Doppelblindvergleich der Wirkungen eines neuen trizyklischen Antidepressivums (Lofepramin) und eines tetrazyklischen Antidepressivums (Maprotilin). International Pharmacopsychiatry (Basel). 12(2):65-71, 1977.

Two random groups of depressed outpatients were treated with either maprotiline or the new antidepressant lofepramin. Depressive state was assessed using the Hamilton Depression Scale (HAM-D) before and after 1, 3, and 6 weeks of treatment. Both drugs produced remarkable improvement globally in total HAM-D score as well as in the symptom clusters. The differences in both groups are not significant, but upon compiling results of adverse reactions and therapeutic effect, the treatment outcome in the lofepramin group was slightly superior. 10 references. (Journal abstract)

000608 Plantey, F. Service Hospitalo-Universitaire de Psychiatric, Hopital Saint-Jacques, 44035 Nantes Cedex, France **Pimozide in treatment of anorexia nervosa.** Lancet (London). No. 8021:1105, 1977.

In a letter to the editor, a medical case involving the treatment with pimozide of a 17-year-old boy suffering from anorexia nervosa is described. The patient received 4mg three times a day for one month. Within 3 weeks improvement was dramatic, including a weight gain of 9kg. It is concluded that this case history supports the theory of Barry and Klawans, that anorexia nervosa may be related to dopaminergic receptor hyperactivity, and calls for a controlled trial of pimozide in anorexia nervosa. 13 references.

000609 Radmayr, E. Bahnhofplatz, A-6850 Dornbirn, Austria **/Experience with Sinequan in a single evening dose./** Erfahrungen mit Sinquan in einer Einmaldosis am Abend. Medizinische Welt (Stuttgart). 28(25):1132-1135, 1977.

An attempt to reduce Sinequan intake to a single bedtime dose is reported. A clinical sample of 100 patients, 86 of whom were diagnosed as manic-depressives, was placed on single evening doses of 25, 50, 75, or 100mg Sinequan. Seventeen patients receiving 100mg showed reduced motor activity, sleepiness, and slight hypotonia; these symptoms were relieved by dose reduction. Initial intake of 75mg seems optimal; some patients may require 100mg after 1 or 2 weeks. The single bedtime dose has the following advantages: 1) fewer interruptions in the patient's routine for treatment of his disease; 2) a stronger soporific effect at night; and 3) a milder narcotic effect during working hours. 14 references.

000610 Rapoport, Judith L. Dept. of Pediatrics, Georgetown University Hospital, Washington, DC 20007 **Report of Subcommittee on the Treatment of Depression in Children.** In: Schulterbrandt, J., Depression in Childhood: Diagnosis, Treatment. New York, Raven, 1977. 176 p. (p. 163-164.).

The report of the Subcommittee on the Treatment of Depression in Children, presented at the Conference on Childhood Depression, Washington, DC, 1975, discussed the prematurity of treatment with syndrome identification, and drug treatment of children. It was recommended that NIMH not fund any large treatment program at the present time. It was further recommended that a survey be made to determine which therapies pediatricians and child psychiatrists are currently using, emphasizing the drug therapies that are being used for children with psychological and psychiatric problems other than hyperactivity or psychosis. It was also recommended that some small pilot studies of masked depression be undertaken to examine therapy in relation to genetic background or biochemical measures.

000611 Rapoport, Judith L. Dept. of Pediatrics, Georgetown University School of Medicine, Washington, DC 20007 **Pediatric psychopharmacology and childhood depression.** In: Schulterbrandt, J., Depression in Childhood: Diagnosis, Treatment. New York, Raven 1977. 176 p. (p. 87-100).

Pediatric psychopharmacology and childhood depression were examined at the Conference on Childhood Depression, Washington, DC, 1975. Three areas emphasized are: 1) effects of stimulant drugs and steroids on mood in young children; 2) drug treatment of masked depression (enuresis, hyperactivity, headache, anxiety); and 3) drug treatment of depression. It was concluded that early reports on the use of antidepressant drugs in childhood suggest potential future work but provide no conclusions about drug efficacy or about the validity of a concept of childhood depression. It is felt that the current use of antidepressant drugs by pediatricians and child psychiatrists in the United States should be surveyed, and that guidelines are badly needed. It is suggested also that studies be made of the behavioral response of children to such drugs as steroids, which are known to produce affective disturbances in adults. 55 references.

000612 Rider, J. Alfred. Gastrointestinal Research Laboratory, Ralph K. Davies Medical Center, San Francisco, CA **Lorazepam in anxiety with GI disorders.** Psychosomatics. 18(3):55-58, 1977.

In a double-blind study, the anxiolytic effects of lorazepam, a potent benzodiazepine derivative, were evaluated against those of placebo in a group of patients who were suffering gastrointestinal (GI) disorders along with associated anxiety. Both GI and anxiety symptoms were assessed prior to the study and at biweekly intervals thereafter with the aid of a target symptom review consisting of 16 items. Results show that patients receiving lorazepam had significantly greater improvement. It is posited that the findings emphasize the effectiveness of lorazepam as an anxiolytic agent and point up the ability of the target symptom rating scale as a tool to effectively discriminate between treatments. 10 references.

000613 Schulterbrandt, Joy G.; Raskin, Allen. Center for Studies of Child and Family Mental Health, National Institute of Mental Health, Rockville, MD 20857 **Depression in childhood: diagnosis, treatment, and conceptual models.** New York, Raven, 1977. 176 p.

The Conference on Childhood Depression, Washington, DC, 1975, examined problems involved in the study of depression in children, including difficulties in diagnosing depression in children or operationally defining the symptoms of depression in children, the prevalence of depression in children, and the treatment of depression in children, particularly the use of antidepressant drugs in this age group. Techniques and approaches used in developing inventories for rating depression in children are described. Some of the more recent results with animals and children that provide a conceptual or theoretical basis for the onset of depression in children and adults were studied. NIMH guidelines for future research and dgvelopment needs in the area of childhood depression are provided.

000614 St.-Laurent, Jacques; Ban, Thomas A.; Carle, Roger. Hospital Montfort, Ottawa, Ontario, Canada **Doxepin in the treatment of neuroses: a comparative clinical study of doxepin, chlordiazepoxide, hydroxyzine, meprobamate, and phenobarbital.** Current Therapeutic Research. 22(2):316-320, 1977.

To evaluate the therapeutic effectiveness of doxepin in the treatment of neuroses, a comparative clinical study with doxepin, chlordiazepoxide, hydroxyzine, meprobamate, and phenobarbital was conducted in 76 neurotic patients with manifest anxiety. All five treatment groups showed statistically significant improvement on the total scores, all four factors, and 11 of the 18 items of the Brief Psychiatric Rating Scale. In addition, all five treatment groups showed statistically significant improvement on the total scores and four of the six factors of the Wattenborn Psychiatric Rating Scale. Nevertheless, the rate of improvement was significantly faster with doxepin than with the other drugs on the total scores of both the BPRS and the WPRS, the factor Excitement/Disorientation of the BPRS, and the item Tension of the BPRS. 3 references. (Author abstract modified)

000615 Thompson George N. School of Medicine, University of California, Irvine, CA **Post-traumatic psychoneurosis: evaluation of drug therapy.** Diseases of the Nervous System. 38(8):617-619, 1977.

The results of drug therapy and psychotherapy in posttraumatic psychoneurosis are evaluated. Twenty five patients received psychotherapy at twice weekly intervals for hourly visits for a period of 1 year and 25 patients were given one drug combination three times a day. According to a rating scale for psychoneuroses, those patients on drug therapy showed a 21.42% greater improvement than those patients with psychotherapy. The economic and scientific implications of this finding are discussed. 1 reference.

000616 Wang, Richard I. H.; Wiesen, Richard L.; Stockdale, Susan; Hieb, Elizabeth. Veterans Administration Center, Wood, WI 53193 **A method for evaluating anxiolytic sedatives.** Journal of Clinical Pharmacology. 17(5,6):269-275, 1977.

A double-blind study of the anxiolytic efficacy of lorazepam is reported. Patients with diagnoses of anxiety received 3mg to 6mg lorazepam daily for 4 wk or placebo. Lorazepam was significantly superior to placebo as assessed by the Hamilton Anxiety Rating Scale and the Wang Anxiety Rating Scale, and produced no serious adverse effects. Anxiolytic efficacy did not differ significantly among the four weekly ratings. Choice of rating scale, patient selection, maintenance of the double-blind status, the subjects' environment during the study, and the subjects' understanding of the study are discussed as considerations in reducing sources of variability and bias in the study of anxiolytic drugs. 6 references. (Author abstract modified)

000617 White, James H.; Schnaultz, N. L. University of Texas Medical Branch, Galveston, TX 77550 **Successful treatment of anorexia nervosa with imipramine.** Diseases of the Nervous System. 38(7):567-568, 1977.

Two cases of improvement in secondary anorexia nervosa following treatment with imipramine in a 16-year-old boy and a 15-year-old girl are reported. In both patients, weight loss to the point of emaciation was coupled with severe depression. Initiation of imipramine therapy in conjunction with psychotherapy resulted in eventual weight gain, at which point imipramine was discontinued. In both cases no recurrence of anorexia was found following discontinuation of imipramine, although some depressive symptoms did recur in the girl. The use of imipramine in these cases produced rapid enough improvement in physical condition so that coercive measures were not necessary. 2 references.

11 DRUG TRIALS IN MISCELLANEOUS DIAGNOSTIC GROUPS

000618 Altshuler, Kenneth Z.; Abdullah, Syed; Rainer, John D. Columbia University College of Physicians and Surgeons, 722 West 168 Street, New York, NY 10032 **Lithium and aggressive behavior in patients with early total deafness.** Diseases of the Nervous System. 38(7):521-524, 1977.

To determine the effectiveness of lithium therapy on violent and aggressive behavior in psychiatric inpatients, lithium was administered to early hearing impaired patients diagnosed as sociopathic personality disordered, (n=3), excited catatonic schizophrenic (n=2), and paranoid schizophrenic (n=4), between 16 to 52 years old. Of the nine patients, one developed side-effects requiring discontinuation of medication, one of the excited catatonics failed to respond, and one sociopathic personality disordered adolescent failed to continue treatment although initial response was good; in the remaining patients a significant decrease in violent and aggressive behavior was found. 21 references.

000619 Baron, Miron. New York State Psychiatric Institute, 722 W. 168th Street, New York, NY 10032 **Linkage between an X-chromosome marker (deutan color blindness) and bipolar affective illness: occurrence in the family of a lithium carbonate-responsive schizo-affective proband.** Archives of General Psychiatry. 34(6):721-725, 1977.

The genetic linkage between an X-chromosome marker (deutan color blindness) and affective disorder in an informative family of a schizoaffective proband is investigated and reported. Linkage data and lithium carbonate response in the proband suggested that the schizophreniform affective spectrum in members of the pedigree reflect a genetically distinct disorder. The possible usefulness of genetic markers as ancillary diagnostic tools in affective spectrum disorders is discussed. It is noted that comprehensive data on a direct relation of X-chromosome linkage to lithium carbonate responsivity is lacking. 38 references.

000620 Bugental, Daphne Blunt; Whalen, Carol K.; Henker, Barbara. Dept. of Psychology, University of California, Santa Barbara, CA 93106 **Causal attributions of hyperactive children and motivational assumptions of two behavior-change approaches: evidence for an interactionist position.** Child Development. 48(3):874-884, 1977.

The extent to which the initial expectations held by impulsive and hyperactive children with learning problems are related to the differential effectiveness of two behavior change strategies, one emphasizing external monitoring and control, and the other emphasizing internal monitoring and regulation, is studied. Hyperactive boys were tutored individually for 2 months in a classroom setting; half were instructed in self-controlling speech, and half were given contingent social reinforcement. Within each treatment group, half of the children were taking methylphenidate (Ritalin), and half were unmedicated. Measures were obtained for each child's attributions of personal causation for academic success and failure. Significant interactions were found between interventions and child attributions and medication status. The self-control intervention produced significantly greater error reduction on mazes for children with high perceived personal causality and nonmedicated children. The social reinforcement intervention produced trends toward greater error reduction for children with low perceived personal causality and medicated children. The efficacy of perfecting the match between the child's attributional system and the attributional assumptions implicit in an intervention approach is discussed. 52 references. (Author abstract modified)

000621 Carlsson, C.; Johansson, P. R.; Gullberg, B. Nordkempspolikliniken, Nordkemsg. 23, S-41305 Goteborg, Sweden **A double-blind cross-over study: apomorphine/placebo in chronic alcoholics.** International Journal of Clinical Pharmacology and Biopharmacy (Munchen). 15(5):211-213, 1977.

The usefulness of apomorphine in the treatment of chronic alcoholism was investigated in a placebo controlled double-blind crossover study. Apomorphine significantly decreased craving for alcohol and tension and had a slight but significant effect on depression. Theoretical aspects of using a dopamine agonist in the treatment of chronic alcoholism are discussed. 5 references.

000622 Crook, Thomas; Ferris, Steven; Sathananthan, Gregory; Raskin, Allen; Gershon, Samuel. Psychopharmacology Research Branch, Division of Extramural Research Programs, NIMH, 5600 Fishers Lane, Rockville, MD 20857 **The effect of methylphenidate on test performance in the cognitively impaired aged.** Psychopharmacology (Berlin). 52(3):251-255, 1977.

The effect of methylphenidate on test performance in the cognitively impaired aged was studied in a double-blind study of 12 elderly subjects in which placebo, 10mg methylphenidate, or 30mg methylphenidate was administered as a single dose of oral medication. Neither dosage of active medication was found to effect psychomotor or psychological test performance, subjective report, heartrate or blood pressure. A subsequent open trial of 45mg methylphenidate resulted in heartrate, blood pressure and subjective changes in two of eight subjects but no effects on test performance. The results suggest that cognitive performance in the moderately impaired aged is unimproved following administration of methylphenidate, and perhaps similar sympathomimetic amines, below a dosage level associated with clinically significant peripheral effects. 24 references. (Author abstract modified)

000623 Duchowny, Michael; Leviton, Alan. Children's Hospital Medical Center, 300 Longwood Ave., Boston, MA 02115 **Methylphenidate therapy for inattentiveness in selected school children.** Annals of Neurology. 1(3):307-308, 1977.

Two females (7 years old) and 1 male (15 years old) were treated with methylphenidate to determine effectiveness in children who were not hyperactive, but whose school difficulties apparently reflected their inability to sustain attention. In each patient, general physical and neurological examinations were unremarkable, but the children daydreamed repeatedly throughout the day at home and at school. Within a week after taking methylphenidate, the children's daydreaming spells virtually disappeared, and all observers noted that their attention spans were longer. The findings suggest two compatible possibilities: 1) daydreaming is a response to the frustrations of a learning handicap; and 2) disorders of attention tend to cluster with disorders of perception or cognition or both. 5 references.

000624 Ferris, Steven H.; Sathananthan, Gregory; Gershon, Samuel; Clark, Cathy. Neuropsychopharmacology Research Unit, Department of Psychiatry New York University Medical Center, 550 First Ave., New York, NY 10016 **Senile dementia: treatment with deanol.** Journal of the American Geriatrics Society. 25(6):241-244, 1977.

In the light of recent research indicating that acetylcholine deficiency may underlie memory impairment in senile dementia, deanol (2 dimethyl-aminoethanol, a drug assumed to increase brain acetylcholine), was given openly for 4 weeks to 14 senile outpatients to determine its safety and effect on cognitive impairment. Results showed no adverse affects from dosages up to 600mg three times a day. Ten patients showed global improvement and total score on the Sandoz Clinical Assessment Geriatric was lowered as a result of reduced depression, irritability, and anxiety and increased motivation/initiative. Pretreatment and posttreatment cognitive tests indicated no changes in memory or other cognitive functions. Results suggest that although deanol may not improve memory, it may produce positive behavioral changes in some senile patients. 20 references. (Author abstract modified)

000625 Fink, Max Department of Psychiatry, State University of New York at Stony Brook, Stony Brook, NY 11790 **Study of long-term hashish users in Greece: summary and discussion.** In: Stefanis, C., Hashish: studies of long-term use. New York, Raven Press, 1977. 181 p. (p. 151-158).

A series of studies performed in Greece to determine whether behavioral, medical, neurological, psychological, or social deficits are associated with long-term hashish use is summarized and discussed. Also included in the studies were an assessment of the development of tolerance, dependence, or a withdrawal syndrome in the subjects and studies performed to determine whether chronic hashish users respond differently to varying doses of delta9-tetrahydrocannabinol administered in the form of marihuana, hashish, or pure chemical mixed with tobacco. No evidence was found to indicate that the prolonged use of hashish is associated with brain damage. Little or no evidence was found to indicate that the prolonged use of cannabis produces an organic mental syndrome or an organic type psychosis, either as a chronic condition or as an acute episodic reaction. Little or no evidence was found that cannabis use leads to withdrawal from social and economic responsibilities, or failure to work. The subjects reported that hashish improved their work performance, especially when the work is manual, repetitive, and boring. However, the subjects are in frequent conflict with the authorities as the result of their drug use, and this may contribute to their poor assimilation into the legal and social ethos of the country. Some of the studies indicated that tolerance to the effects of the drug develops in chronic users; however, physical dependence and withdrawal symptoms upon discontinuation were not found. The few medical problems found in chronic hashish users could be attributed to the concurrent use of other drugs such as tobacco and/or alcohol. These findings are compared to those obtained in similar studies performed in other countries.

000626 Fujii, Takaaki. Department of Internal Medicine, Fujii Internal Hospital, Hon-cho 9-17, Utsunomiya City 320, Japan **Studies on digital plethysmographic patterns in female patients with non-specific complaints.** Japanese Journal of Psychosomatic Medicine (Tokyo). 17(2):101-107, 1977.

Changes of digital plethysmographic patterns in 94 females (aged 16 to 54) with nonspecific complaints following the administration of vitamin E, gamma-oryzanol, sex hormones, or tranquilizers are reported. Results of the study indicated that in 29 cases where complaints were psychogenic, 16 showed a peripheral plateau wave, 5 a spastic wave, 3 a monophasic wave, 2 a biferiens wave, 2 showed dilated waves, and 1 showed an anacrotic wave prior to therapy. Normalization of digital plethysomographic patterns and a remarkable decrease of nonspecific complaints were not observed in these psychogenic cases; however, in 65 cases where complaints were induced by humoral imbalances, 18 cases of peripheral plateau wave, 4 of spastic wave, 4 of bisferiens wave, 4 of dilated wave, and 1 of anacrotic wave showed normalization of digital plethysmographic patterns following therapy. Most nonspecific complaints disappeared with the digital plethysmographic patterns. Findings in six representative cases where this happened are reported in detail. 7 references. (Author abstract modified)

000627 Gadow, Kenneth D. Institute for Child Behavior and Development, University of Illinois, Champaign, IL 61820 **Psychotropic and anticonvulsant drug usage in early childhood special education programs III. A preliminary report: parent interviews about drug treatment.** Champaign, IL, Institute for Child Behavior and Dev., April, 1977. 47 p.

Results of parent interviews on the use of psychotropic and anticonvulsant drug therapy were presented at the annual meeting of the Council for Exceptional Children held in Atlanta, Georgia, April 1977. Telephone interviews with the parents of 246 children enrolled in special education programs in Illinois schools indicated: 1) stimulants were the most frequently prescribed drugs for hyperactive (HA) children, while diphenylhydantoin, ritalin, and primidone were most often prescribed

for convulsive disordered (CD) children; 2) CD children received drugs more often and combinations of drugs more often than HA children; 3) most drugs required administration two to three times per day; 4) frequently reported side-effects of HA drugs were weight loss, insomnia, mood changes, and depressed reaction; 5) frequently reported CD drug side-effects included gingival hyperlapsia, gait ataxia, drowsiness, and dilantin intoxication; 6) HA children were more likely to terminate or change drug dosages than were CD children; 7) lack of rapport and information were major parent complaints about physicians; and 8) 90% of the parents reported no problems with the educational services. Extensive tabular data are included. 89 references.

000628 Gaitz, Charles M.; Varner, Roy V.; Overall, John E. Texas Research Institute of Mental Sciences, Texas Medical Center, Houston, TX 77030 **Pharmacotherapy for ogranic brain syndrome in late life: evaluation of an ergot derivative vs placebo.** Archives of General Psychiatry. 34(7):839-845, 1977.

A study is reported of the comparative evaluation of several pharmacotherapy compounds for organic brain syndrome (OBS) in late life. Evaluation of treatment modalities, including pharmacotherapy for OBS has been difficult because of sampling and methodological problems, and comparisons of research studies are all but impossible. In this study, an ergot derivative, a combination of dihydroergocornine mesylate, dihydroergocristine mesylate, and dihydroergokyptine mesylate (Hydergine) was compared with placebo, using a double blind technique in a sample of nursing home residents with evidence of OBS. An 18 category symptom rating scale was used for periodic assessment over a six month interval. Comparisons of the two groups of subjects disclosed that the Hydergine treated group showed statistically significantly more improvement in most of the variables measured, especially during the last three months of treatment. Furthermore, sophisticated analysis revealed that positive changes in cognitive function cannot be accounted for as a mere reflection, or halo effect, associated with improved mood and general sense of well-being. 19 references. (Author abstract modified)

000629 Golden, Gerald S. Albert Einstein College of Medicine, 1300 Morris Park Avenue, Bronx, NY 10461 **The effects of central nervous system stimulants on Tourette syndrome.** Annals of Neurology. 2(1):69-70, 1977.

To determine the effect of central nervous stimulants on Tourette syndrome, information was obtained from 88 patients. Of 32 patients, who received a CNS stimulant (methylphenidate, dextroamphetamine, imipramine, chlorphenteramine, or methamphetamine) 17 showed symptoms markedly accentuated by the drugs. Two children administered methylphenidate suddenly developed Tourette syndrome. Several hypotheses are put forth to explain the results. 4 references. (Author abstract modified)

000630 Greenblatt, D. J.; Allen, M. D.; Shader, R. I. Massachusetts General Hospital, Boston, MA 02114 **Toxicity of high-dose flurazepam in the elderly.** Clinical Pharmacology and Therapeutics. 21(1):104, 1977.

The relationship of dosage and patient age to frequency of side-effects attributed to flurazepam was studied in 2542 hospitalized medical patients. Results were reported at the 78th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, Dallas, 1977. The mean age of the patients was 55 years, and 40% were 60 years old or older. The efficacy of flurazepam was related to the dose, as were adverse reactions. Efficacy was unsatisfactory in 9% of patients receiving 30mg and 14% of patients receiving 15mg. The principal side-effect was residual drowsiness, which occurred in 3% of patients. Side-effects increased from 1% in patients receiving less than 15mg/day flurazepam, to 3% in patients receiving 15 to 29mg/day, and 12% in patients receiving 30mg/day or more. Toxicity increased with advancing age from 2% in patients under 60, to 4% in patients 60 to 79 years old, and 7% in patients 80 years or older. It is concluded that low doses of flurazepam are safe for treatment of insomnia in elderly individuals, but such patients are susceptible to CNS depression at high doses.

000631 Hansen, Lars Bolvig; Larsen, Niels-Erik. Deparment R, Mental Hospital Nordvang, DK-2600 Glostrup, Denmark **Plasma concentrations of perphenazine and its sulphoxide metabolite during continuous oral treatment.** Psychopharmacology (Berlin). 53(2):127-130, 1977.

Plasma concentrations of perphenazine (Trilafon) and perphenazine sulfoxide were estimated during a 2 week period in 16 patients receiving oral perphenazine treatment for various psychotic disorders. The results demonstrated that the average concentration of three plasma samples was a reasonably good expression of the steady state plasma level despite a great fluctuation in the concentration from sample to sample. Increased doses in three of the patients resulted in disproportionate increases in the plasma levels. Neurological side-effects were recorded and their relation to plasma concentrations established. 7 references. (Journal abstract)

000632 Hartmann, Ernest; Elion, Richard. Boston State Hospital, 591 Morton Street, Boston, MA 02124 **The insomnia of 'sleeping in a strange place': effects of l-tryptophane.** Psychopharmacology (Berlin). 53(2):131-133, 1977.

To establish the effects of l-tryptophane on adaptive insomnia, 42 normal human subjects were studied in a sleep laboratory for one night each. Fourteen were given placebo at bedtime, 14 took l-tryptophane 1g, and 14 took l-tryptophane 3g. Both tryptophane groups had significantly lower sleep latency than the placebo group. It was concluded that l-tryptophane may have a clinical role in the treatment of mild or moderate sleep onset insomnia. 7 references. (Journal abstract modified)

000633 Hayek, J. Kantonsspital, CH-8091 Zurich, Switzerland **/Treatment of Parkinson's disease with the combination L-dopa/L-carbidopa./** Die Behandlung des Morbus Parkinson mit dem Kombinationspraparat L-Carbidopa/L-Dopa: Bericht uber eine Zjahrige Studie. Schweizerische Medizinische Wochenschrift (Basel). 107(14):474-479, 1977.

The effects of a combination of L-dopa and L-carbidopa (sinemet) in the treatment of Parkinson's disease were studied in 40 patients for periods of up to 2 years. The results correspond to those in the literature; in two thirds of the cases good to very good improvement was obtained. The principal side-effects were dyskinesia, hypotonia, and gastrointestinal and psychotic symptoms, though they seldom necessitated interruption of treatment. L-carbidopa/L-dopa affords a true alternative therapy to L-dopa/decarboxylase inhibitor in the modern treatment of Parkinson's disease. The dosage range was generally up to a maximum of one tablet three times daily. Sinemet tablets are simple and convenient to handle for both doctor and patient. Dosage titration to therapeutic efficacy can be achieved in 7 to 10 days without complications, though a slower titration based on individual patient reaction and requirements is recommended. 31 references. (Journal abstract modified)

000634 Heltberg, Jon; Arnold, Elisabeth; Kirk, Lars; Hansen, Tage. A/S Dumex, Prags Boulevard 37, 2300 Kobenhavn S, Denmark **/Pharmacokinetic studies of tetraethyl-l-14C thiuram-disulfid (14C-disulfiram). a preliminary study./** Farmakokinetiske undersogelser af 14C-maerket disulfiram (Antabus). En praeliminaer undersogelse. Nordisk Psykiatrisk Tidsskrift (Kungsbacka). 30(7):507-511, 1977.

The pharmacokinetic effects of 14C-disulfiram on alcoholics were studied in 16 patients, between 29 and 70 years old. Four did not receive any treatment at the time of the study, while 12 received 800mg disulfiram orally, twice weekly. Both patient groups received 800mg 14C-disulfiram on an empty stomach. The radioactivity levels in serum, urine, feces, and vomiting was evaluated. The serum maximum was reached after 4 to 24 hours and the mean serum value of radioactivity was 150cpm per ml for all patients. Between 67% and 77% of the radioactivity was found in the urine. The level of radioactivity in feces was insignificant, while in vomiting it was of the same level as in serum. The binding of radioactivity to plasma proteins was 25% to 75%. The results show that the differences of radioactivity in serum and urine were not significant between the two groups. 3 references.

000635 Houston, A. B.; Brodie, M. J.; Moore, M. R.; Thompson, G. G.; Stephenson, J. B. P. Royal Hospital for Sick Children, Yorkhill, Glasgow G3 SJ, Scotland **Hereditary coproporphyria and epilepsy.** Archives of Disease in Childhood (London). 52(8):646-650, 1977.

The complex relationship between porphyria, epilepsy, and anticonvulsant drugs in a 9-year-old boy with mental deterioration and epilepsy, who suffered an acute attack of hereditary coproporphyria, is discussed. The patient received phenobarbitone, phenytoin, meprobamate and primodone. When drugs were withdrawn seizure control improved, and it is suggested that no anticonvulsant drug is totally safe for use in the acute porphyrias. 28 references.

000636 Ikeda, Hisao. Department of Neuropsychiatry, Okayama University Medical School, Okayama 700, Japan **Effects of taurine on alcohol withdrawal.** Lancet (London). No. 8036:509, 1977.

The beneficial effect of taurine in preventing and managing withdrawal symptoms in the chronic alcoholic is described in a letter to the editor. A study in which 22 alcoholic inpatients were administered three grams per day of taurine for 7 consecutive days, and compared with 38 inpatients given other drugs, is reported. Taurine patients reported significantly fewer symptoms of alcohol withdrawal (delirium, hallucinations, amentia, and/or general or partial convulsions) than did controls.

000637 Johnson, William G.; Fahn, Stanley. Neurological Institute, 710 West 168th St., New York, NY 10032 **Treatment of vascular hemiballism and hemichorea.** Neurology. 27(7):634-636, 1977.

Perphenazine treatment of 8 patients with vascular hemichorea was studied; all were elderly (68 to 82 years old) and hypertensive; three had primarily choreic movements while five had, in addition, proximal flailing movements of hemiballism. In 7, dramatic response to therapy was seen, with virtual cessation of movements. In 1 case, only partial response was obtained with a high dose of perphenazine, and this dose had to be reduced because of drowsiness and hepatotoxicty. In 4 patients, movement did not recur after the drug was stopped. The results suggest that perphenazine may be a highly effective agent for the treatment of hemichorea and hemiballism and that improvement can be maintained in some patients after therapy is discontinued. 27 references. (Author abstract modified)

000638 Juhl, Randy P.; Tsuang, Ming T.; Perry, Paul J. Ferris State College School of Pharmacy, Big Rapids, MI 49307 **Concomitant administration of haloperidol and lithium carbonate in acute mania.** Diseases of the Nervous System. 38(9):675-676, 1977.

Prospective and retrospective studies of 55 psychotic patients treated concomitantly with oral haloperidol and lithium carbonate did not reveal any evidence of permanent brain damage or persistent dyskinesias; adverse reactions were transient and without sequelae. Results in these patients afford further evidence that combined use of haloperidol and lithium is safe and effective in the treatment of mania. Careful management is essential to minimize the risk of serious adverse reaction. 6 references. (Author abstract)

000639 Kato, Hideaki; Mori, Toshinori. Department of Neuropsychiatry, School of Medicine, Gifu University, Gifu, Japan **A clinical and electroencephalographic study on antiepileptic activity of clonazepam -- relationship between clinical effects of oral administration and electroencephalographic effects of intravenous administration.** Folia Psychiatrica et Neurologica Japonica (Tokyo). 31(2):183-194, 1977.

The antiepileptic activity of clonazepam was evaluated in 30 patients with refractory epilepsy and seizures that had not been controlled completely by conventional antiepileptic drugs, based on the relationship between clinical effects of the long-term oral administration and electroencephalographic effects of the intravenous administration. In a clinically ineffective case with tonic clonic convulsion, EEG findings were aggravated after the intravenous injection of clonazepam. Clonazepam was most clinically effective on complex partial seizures by oral administration and suppressed remarkable temporal spikes by intravenous injection, suggesting that clonazepam has specific effects on complex partial seizures. It is concluded that clonazepam suppressed remarkably the photosensitivity on the EEG by intravenous injection and was effective over a long period on the photosensitive epilepsy by oral administration. 33 references.

000640 Kothary, S. P.; Zsigmond, E. K. Department of Anesthesiology, University of Michigan Medical Center, Ann Arbor, MI 48104 **A double-blind study of the effective antihallucinatory doses of diazepam prior to ketamine anesthesia.** Clinical Pharmacology and Therapeutics. 21(1):108-109, 1977.

A study comparing the psychotropic effects of diazepam i.v. vs. placebo in 100 volunteer patients who received ketamine i.v. for induction and maintenance of anesthesia with assisted oxygen ventilation was reported at the 78th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, Dallas, 1977. The patients were followed for 24 hr for the psychic effects of ketamine. The incidence of hallucinations was 84% and 96% in the placebo groups, 4% in the low dose diazepam group, and 0% in the high dose diazepam group. The incidence of unpleasant dreams and illusions was 20% and 36% in the two placebo groups, and 4% in the two diazepam groups. The incidence of pleasant dreams was 48% and 60% in the two placebo groups and 4% in the two diazepam groups. Diazepam was given 5 min before ketamine.

000641 Kudrow, L. California Medical Clinic for Headache, Inc., Encino, CA 91316 **Lithium prophylaxis for chronic cluster headache.** Headache. 17:15-18, 1977.

In a study undertaken to determine the efficacy of prophylactic lithium treatment for chronic cluster headache, 32 patients with chronic cluster headache unresponsive to conventional therapy were treated with lithium carbonate for 32 weeks. In four patients, treatment was discontinued within the first two weeks because of side-effects. Marked and continued improvement occurred in 27 of the remaining 28 patients throughout the treatment period. It is concluded that long-term prophylactic lithium maintenance treatment appeared to be effective in selected patients with chronic cluster headache.

000642 Lander, Cecilie M.; Edwards, V. E.; Eadie, M. J.; Tyrer, J. H. Department of Medicine, University of Queensland, Royal Brisbane Hospital, Brisbane 4029, Australia **Plasma anticonvulsant concentrations during pregnancy.** Neurology. 27(2):128-131, 1977.

A study of plasma anticonvulsant concentrations during pregnancy is presented, based on 11 epileptic women taking phenytoin and/or phenobarbital or a drug metabolized in the body to phenobarbital. As judged from the relationship between plasma level and drug dose, phenytoin requirement increased in all 10 women taking this drug during pregnancy. The requirement fell again in the puerperium. Plasma phenobarbital levels decreased during pregnancy in all five women taking a constant daily dose of phenobarbital or a congener. It is suggested these findings be borne in mind if epileptics are to be protected against seizures during pregnancy and against anticonvulsant overdosage during puerperium. 11 references. (Journal abstract modified)

000643 Leibowitz, M.; Sunshine, A. Department of Medicine, New York University School of Medicine, New York, NY 10016 **Long-term efficacy and safety of triazolam and flurazepam.** Clinical Pharmacology and Therapeutics. 21(1):109, 1977.

A study comparing triazolam, and flurazepam in 51 outpatients with insomnia for 12 weeks was presented at the 78th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, Dallas, 1977. At the end of 12 weeks, patients were put on placebo for a week. Patients were interviewed by a physician weekly or biweekly during the trial. There were no differences between triazolam and flurazepam except that triazolam shortened the onset of sleep in comparison with flurazepam during weeks 1, 6, and 10. Tolerance did not develop relative to either medication. During the placebo week, the quality of sleep deteriorated and there was a sharp reduction in the quality of all sleep parameters. When the active drug was restored, all efficacy parameters improved markedly. Side-effects for both drugs included drowsiness, amnesia, and impaired motor function.

000644 Loughnan, Peter M.; Greenwald, Alan; Purton, William W.; Aranda, Jacob V.; Watters, Gordon; Neims, Allen H. McGill University, Montreal, Quebec, Canada **Pharmacokinetic observations of phenytoin disposition in the newborn and young infant.** Archives of Disease in Childhood (London). 52(4):302-309, 1977.

The pharmacokinetic profile of phenytoin (DPH) in 30 infants aged 2 to 96 days was studied. The plasma DPH half-life during the first week of life in term infants was prolonged and very variable, and much shorter thereafter. In preterm infants the half-life was much longer and more variable. The mean apparent volume of distribution was similar in preterm newborn, term infants during the first week of life, and term infants over 2 weeks of age. Predictions of steady state plasma DPH concentrations, based on these kinetic parameters, were confirmed. Very low 'trough' plasma DPH concentrations were observed after the 14th postnatal day in 19 infants receiving 8 mg/kg per 24 h orally. On the other hand, infants less than 2-weeks-old receiving the same dose, especially if preterm, frequently showed drug accumulation to toxic plasma DPH concentrations. The impaired binding of DPH to newborn plasma protein was confirmed but normal adult values were approached by the age of 3 months. An intravenous loading dose of 8 mg/kg sodium phenytoin can be expected to generate a mean plasma DPH concentration of 10mg/l (40micromol/l) in the newborn. Loading doses of up to 12mg/kg were given without untoward effects. It was concluded that during the first week or so of life, plasma DPH half-life is so variable that no fixed dosage regimen can be derived from the available data. Beyond the second week of life, however, a dose of 8mg/kg per 24 h is probably inadequate for most infants. 36 references. (Author abstract modified)

000645 Major, Leslie F.; Ballenger, James C.; Goodwin, Frederick K.; Brown, Gerald L. Alcoholic Rehabilitation Unit, National Naval Medical Center, Bethesda, MD **Cerebrospinal fluid homovanillic acid in male alcoholics: effects of disulfiram.** Biological Psychiatry. 12(5):635-642, 1977.

A study of cerebrospinal fluid amine metabolites in a group of male alcoholics, investigating the possibility that some of disulfiram's effects are related to alterations in biogenic amine metabolism, is presented. If an individual maintained on disulfiram (Antabuse) ingests alcohol, excess acetaldehyde is formed, resulting in a toxic reaction. In addition to this toxic interaction with alcohol (the basis of its use as a deterrent), there are both behavioral and biochemical observations to suggest that disulfiram alone has a direct effect on the CNS. Results indicate that disulfiram treatment was associated with a significant reduction in homovanillic acid, the major metabolite of dopamine, while no change was noted in 5-hydroxyindoleacetic acid, the major metabolite of serotonin. Prior to disulfiram, patients with withdrawal symptoms had significantly lower homovanillic acid than those without such symptoms. 44 references. (Journal abstract modified)

000646 Messiha, F. S.; Erickson, H. M., Jr.; Goggin, J. E. Department of Pharmacology and Therapeutics, Texas Tech University School of Medicine, Lubbock, TX 79406 **Evaluation of lithium carbonate in the management of Gilles de la Tourette's syndrome.** Clinical Pharmacology and Therapeutics. 21(1):111, 1977.

A study of the use of lithium in Gilles de la Tourette's syndrome was presented at the 78th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, Dallas, 1977. This approach was suggested by the efficacy of dopamine receptor blocking agents in Tourette's disease and the favorable response of dyskinesias to lithium therapy. Lithium carbonate was given orally in gradually increasing doses to two male patients with severe Tourette's disease. Serial 24 hr urine collections and blood samples were obtained on the days clinical ratings and objective behavioral assessments were made. At plasma lithium levels of 0.5to 0.6mEq/l, there was mitigation of coprolalia and tics, and at plasma lithium levels of 0.8-0.9mEq/l, one patient achieved complete remission of symptoms and the other showed marked improvement. Results appear to suggest a dopamine dysfunction in Tourette's disease. 1 reference.

000647 Meyer, John Stirling; Welch, K. M. A.; Deshmukh, V. D.; Perez, F. I.; Jacob, R. H.; Haufrect, D. B.; Mathew, N. T.; Morrell, R. M. Baylor College of Medicine, Texas Medical

Center, Houston, TX 77030 **Neurotransmitter precursor amino acids in the treatment of multi-infarct dementia and Alzheimer's disease.** Journal of the American Geriatrics Society. 25(7):289-298, 1977.

The effect of neurotransmitter precursor amino acids (PAA) in the treatment of multiinfarct dementia (MID) and Alzheimer's disease (AD) was studied. Ten patients with severe dementia due to Alzheimer's disease (AD) or multiinfact dementia (MID) or both, were treated with the precursor amino acids of the neurotransmitters serotonin and dopamine. Serial clinical evaluations and measurements of neuropsychologic function were performed. Levels of homovanillic acid (HVA) and 5-hydroxyindoleacetic acid (5-HIAA) were determined before and after administration of probenecid. Side effects of the PAA therapy were diarrhea, drowsiness, nausea, vomiting and agitation, all of which were controlled by reducing the dosage. One patient with MID and one with AD+MID showed clinical and psychologic improvement, but the others did not improve. Analysis of the cerebrospinal fluid for HVA and 5-HIAA before and after the probenecid test indicated some improvement in the metabolic turnover of these acid metabolites of serotonin and dopamine after administration of their precursor amino acids. 17 references. (Journal abstract modified)

000648 Miller, Loren; Cornett, Terry; Drew, William; McFarland, Dennis; Brightwell, Dennis; Wikler, Abraham. Dept. of Psychiatry, University of Kentucky College of Medicine, Lexington, KY 40506 **Marijuana: dose-response effects on pulse rate, subjective estimates of potency, pleasantness, and recognition memory.** Pharmacology (Basel). 15(3):268-275, 1977.

The effects of marihuana containing 0mg, 5mg, 10mg, or 15mg delta9-tetrahydrocannabinol on pulse rate, subjective estimates of potency and pleasantness, and performance in a recognition memory test were assessed in 34 experienced marihuana users. The effects of marihuana on pulse rate and subjective measures of potency and pleasantness were dose related. Ratings of potency and changes in pulse rate were highly correlated, but this relationship did not hold within a given dosage range as determined by partial correlations. No effect of marihuana on recognition memory test performance was noted. Possible explanations for the lack of effect on recognition memory in this study as compared to previous reports of the deleterious effects of the drug on free recall are discussed. 16 references. (Author abstract modified)

000649 Milliren, John W. University of Hartford, Hartford, CT 06117 **Some contingencies affecting the utilization of tranquilizers in long-term care of the elderly.** Journal of Health and Social Behavior. 18(2):206-211, 1977.

An analysis of the utilization of drugs in a long-term care facility for the elderly is presented which focuses on anxiety level, sex, mental status, physical dependency, friendliness to the staff, and friendliness to other patients as factors affecting the administration of major tranquilizers. It was found that females are more likely than males to receive major tranquilizers, and females were more likely than males to be defined as anxious. However, when the anxiety level is held constant, females are still more likely than males to receive tranquilizers. Among males, low mental status and judged unfriendliness to the staff apparently lead to the administration of tranquilizers. The relevance of these findings to the literature on sex-roles and mental illness is discussed, and policy implications for drug review procedures are suggested. 18 references. (Author abstract)

000650 Mudd, John W. University of California, San Francisco Medical Center, San Francisco, CA 94143 **Impotence responsive to glyceryl trinitrate.** American Journal of Psychiatry. 134(8):922-925, 1977.

Evidence that glyceryl trinitrate serves to treat and diagnose atherosclerotic impotence in a man with psychogenic impotence is presented. The prevalence of atherosclerotic impotence is not known but may be relatively high in older men. Vasodilators may be effective in diagnosing these patients, who do not have clear signs of arterial insufficiency of the lower extremities (e.g. Leriche's syndrome). A pharmacological interaction between organic nitrates and imipramine is postulated. 29 references. (Author abstract)

000651 Murray, T. J.; Kelly, Patrick; Campbell, Lynda; Stefanik, Kathy. Dalhousie University, Halifax, Nova Scotia, Canada **Haloperidol in the treatment of stuttering.** British Journal of Psychiatry (London). 130:370-373, 1977.

A double-blind crossover study of haloperidol in 26 adult volunteers with long standing stuttering was assessed. Most of the Ss had had unsuccessful speech and drug therapy. During the 3 month study, their speech and stuttering patterns were repeatedly evaluated from videotaped readings of a standard passage and during spontaneous speaking. Of the 18 patients completing the trial, 11 had significantly improved on haloperidol but not on placebo, 3 had benefitted equally from both, and 4 were unchanged. Improvement was indicated by fewer dysfluencies, increased speed of speaking, and reduced secondary struggle phenomena. Side-effects were common on a dosage of 3mg haloperidol daily. Poor concentration, akathisia, and dystonic movements caused eight patients to discontinue treatment despite significant improvement in five of them. Although statistically significant improvement occurred in most patients on haloperidol, the clinical significance of this form of therapy will be limited by the partial response, the need for continuous medication, the side-effects of haloperidol, and the attitude of stutterers to this type of therapy. It was concluded that despite statistically significant improvement, haloperidol is not a practical medication in long-term therapy for stuttering because of the only partial response, the frequency of side-effects, and the attitude of stutterers towards therapy. 11 references. (Author abstract modified)

000652 Nies, Alexander, Robinson, Donald S.; Friedman, Matthew J.; Green, Ronald; Cooper, Thomas B.; Ravaris, Charles L.; Ives, John O. Veterans Administration Hospital, White River Junction, VT 05001 **Relationship between age and tricyclic antidepressant plasma levels.** American Journal of Psychiatry. 134(7):790-793, 1977.

The relationship between age and tricyclic antidepressant plasma levels was investigated. Older depressed patients treated with imipramine or amitriptyline developed higher steady state plasma levels of imipramine, desipramine, and amitriptyline. In imipramine treated patients this finding was associated with a decreased rate of drug elimination from plasma. These findings provide at least a partial explanation for the increased susceptibility of the older patient to tricyclic antidepressant side-effects and also provide a pharmacological rationale for use of lower dosages in this age group. 19 references. (Author abstract modified)

000653 Osterman, P. O. Department of Neurology, University Hospital, Uppsala, Sweden **A comparison between placebo, pizotifen and 1-isopropyl-3-hydroxy 5-semicarbazono-6-oxo 2.3.5.6-tetrahydroindol (Divascan) in migraine prophylaxis.** Acta Neurologica Scandinavica (Kobenhavn). 56(1):17-28, 1977.

The effects and side-effects in migraine prophylaxis of placebo, Divascan (1-isopropylnoradrenochrome-5-monosemicarbazone), and pizotifen were compared in a double-blind crossover study of 28 adults with a mean duration of migraine of 20 years. Pizotifen significantly reduced the number of migraine attacks, headache index, and the consumption of ergotamine. Divascan reduced the consumption of ergotamine, compared with placebo, and reduced headache frequency and headache index, although not significantly. Significantly more patients stated a preference for pizotifen compared with Divascan. A good or very good effect was reported by 11% of the patients on placebo, 39% on Divascan, and 70% on pizotifen. Pizotifen had frequent side-effects, mainly drowsiness and weight gain, but Divascan did not differ from placebo in this respect. Physical examinations and laboratory investigations did not show any significant changes, apart from weight gain. 22 references. (Author abstract modified)

000654 Potvin, A. R.; Tourtellotte, W. W.; Costanza, A.; Hirsch, S. B. Biomedical Engineering Department, University of Texas at Arlington, Arlington, TX 76010 **Cyclobenzaprine and benzotropine methanesulfonate in Parkinson's disease: a randomized double-blind cross-over study.** Clinical Pharmacology and Therapeutics. 21(1):114, 1977.

A study of the efficacy of cyclobenzaprine and benztropine in 24 male patients with Parkinson's disease, was presented at the 78th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, Dallas, 1977. The randomized, double-blind, crossover clinical trial was followed by an extension study in which patients were permitted to choose either medication. Differences between the two medications were slight, with a majority of patients benefiting from both drugs. In choosing a medication for the extension study, 71% of the patients selected cyclobenzaprine and 29% selected benztropine.

000655 Raft, David; Gregg, John; Ghia, Jawahar; Harris, Louis. Department of Psychiatry, School of Medicine, University of North Carolina, Chapel Hill, NC 27514 **Effects of intravenous tetrahydrocannabinol on experimental and surgical pain.** Clinical Pharmacology and Therapeutics. 21(1):26-33, 1977.

Two i.v. doses of tetrahydrocannabinol (THC) (0.22mg/kg and 0.044mg/kg) were compared with i.v. diazepam (0.157mg/kg) and with placebo as premedication for dental extraction in 10 healthy male students, 18 to 28 years of age. Pain detection thresholds and pain tolerance thresholds were determined using a pressure stimulus and an electrical stimulus. Subjects took the Minnesota Multiphasic Personality Inventory, the Zung Depression Scale, the Beck Depression Inventory, and the Trait-State Anxiety Inventory. The day after each extraction, each subject returned and completed an interview and the Subjective Drug Effects Questionnaire, and rated the pain intensity of the extraction. One month after all the trials, subjects were asked to rate their pain experiences in order of preference. Both THC and diazepam increased pain detection thresholds, but had no effect on pain tolerance thresholds. The high dose THC experience was rated as the least desirable (most painful) by all subjects and the diazepam experience was rated as the least painful. Three subjects preferred low dose THC to placebo (positive THC responders) and six subjects preferred placebo to low dose THC (negative THC responders). The latter group was more submissive and rigid, and less introspective with high anxiety levels. 44 references.

000656 Rapoport, Judith L. NIMH, 5600 Fishers Lane, Rockville, MD 20857 **Report from clinical practice: the "real" and "ideal" management of stimulant drug treatment of hyperactive children. (Unpublished paper).** Rockville, MD, NIMH, 1977. 16 p.

In a discussion of real and ideal management of stimulant drug treatment of hyperactive children, the clinical techniques for assessing hyperactive children, planning the use of medication, and maintaining drug treatment are discussed. When sensitive and flexible clinical practice is applied, the variables of parent and child attitudes and causal judgements about the patient's illness are taken into account as deciding factors about how to present a formulation diagnosis, whether to use medication, and how to continue to monitor medication. The child must be viewed in his social/psychological setting, and any therapeutic decision must take a network of relationships into consideration. 17 references.

000657 Rapoport, Judith L.; Mikkelsen, Edwin J. NIMH, 5600 Fishers Lane, Rockville, MD 20857 **Lithium in child and adolescent psychiatry. (Unpublished paper).** Rockville, MD, NIMH, 1977. 25 p.

Psychopharmacological data on lithium and its therapeutic uses, particularly in children and adolescents, are reported. Lithium chemical structure, absorption and serum half-life, distribution in the system, excretion and detoxification, biochemical and metabolic actions, dose response, time response, and physiological effects are reviewed. Preliminary studies suggest that lithium may be effective in the treatment of aggression and manic depressive disorders. Short-term and long-term side-effects, and drug interactions are presented. Research data indicate that lithium effects in children tend to be nonspecific. Emotionality, mood swings, and outbursts of aggressive behavior seem to improve in a variety of diagnostic groups. Lithium was found not to be effective in the treatment of hyperactivity, childhood psychosis or infantile autism in several studies. Further research is recommended. 77 references.

000658 Reeves, Robert L. Olympia Medical Investigators Limited, 10 West 4th Ave., Olympia, WA 98502 **Comparison of triazolam, flurazepam, and placebo as hypnotics in geriatric patients with insomnia.** Journal of Clinical Pharmacology. 17(5,6):319-323, 1977.

The hypnotic efficacy, safety, and possible development of tolerance to triazolam, flurazepam, and placebo were compared in a double-blind, 28 day study in 41 geriatric outpatients with insomnia. Triazolam was significantly superior to placebo in sleep onset, duration of sleep, number of nighttime awakenings, depth of sleep, and feeling of restfulness in the morning. Triazolam was also superior to flurazepam in duration of sleep and other variables. Flurazepam was significantly superior to placebo only in onset of sleep and depth of sleep. No evidence of development of tolerance was found for either triazolam or flurazepam. 8 references. (Author abstract modified)

000659 Reynolds, Norman C., Jr. University of Wisconsin Medical Unit at Mount Sinai Medical Center, Milwaukee, WI 53233 **Porphyrias: neurologic aspects and the treatment of exacerbations.** Minnesota Medicine. 60(7):515-520, 1977.

The clinical aspects of the porphyrias, a set of seven or more diseases whose pathophysiology centers about varying derangements of heme, the prosthetic groups of hemoglobin, are described with special emphasis on the hepatic forms

which involve neurologic disturbances. It is noted that the presenting features of hepatic porphyria are usually abdominal colic or occasionally psychic disturbances such as hysterical personality. Genetic aspects are discussed with particular attention to recent developments in enzyme assays useful in identifying the disease prior to the appearance of both porphyrinuria and clinical disease state. Drugs which produce exacerbations of hepatic porphyria are listed and contrasted with drugs clinically effective in the treatment of hepatic porphyria, such as the anticonvulsants which aggravate seizures rather than control them. 38 references.

000660 Shafto, Fay; Sulzbacher, Stephen. University of Washington, Seattle, WA 98105 **Comparing treatment tactics with a hyperactive preschool child: stimulant medication and programmed teacher intervention.** Journal of Applied Behavior Analysis. 10(1):13-20, 1977.

Two treatment tactics, food and praise contingent on appropriate play and varying doses of methylphenidate (Ritalin), were evaluated for their effects on a hyperactive preschool child's activity changes. In addition, other social, verbal, and academic behaviors were monitored to examine possible side-effects of the two treatment tactics. Fewer free play activity changes occurred during contingent reinforcement phases while medication had variable effects: increasing attention to tasks, but, at higher doses, decreasing intelligibility of speech and responsiveness to demands. A replicable model is outlined for comparing medication with alternative behavioral strategies to control hyperactivity and enhance skill development. 12 references. (Author abstract)

000661 Uhlenhuth, E. H. University of Chicago, Box 411, 950 East 59th Street, Chicago, IL 60637 **Evaluating antianxiety agent in humans: experimental paradigms.** American Journal of Psychiatry. 134(6):659-662, 1977.

Difficulties in the use of a traditional group experimental paradigm in the evaluation of antianxiety drugs in humans are discussed; and two alternative strategies, single organism research and free operant avoidance, are described. Conventional clinical trials using parallel groups are relatively insensitive to the effects of psychotropic drugs, especially antianxiety agents. Experimental paradigms based on the single organism research strategy offer an alternative. A free operant avoidance procedure clearly distinguished representative psychotropic compounds, including diazepam and pentobarbital, in normal subjects, and a multiple crossover procedure clearly detected antianxiety effects of diazepam in 11 psychoneurotic patients and antipsychotic effects of chlordiazepoxide in individual schizophrenic patients. Such procedures may serve to evaluate the effectiveness of therapeutic interventions in clinical practice as well as in research. 16 references. (Author abstract modified)

000662 van Leeuwen, A. M. H.; Molders, J.; Sterkmans, P.; Mielants, P.; Martens, C.; Toussaint, C.; Hovent, A. M.; Desseilles, M. F. Psychiatric centre "Zon en Schild," Utrechtseweg, NL-Amersfoort, The Netherlands **Droperidol in acutely agitated patients: a double blind placebo-controlled study.** Journal of Nervous and Mental Disease. 164(4):280-283, 1977.

A double-blind placebo controlled evaluation of the value of droperidol in acute agitation was made. Forty one acutely agitated patients received an injection of 4ml of a double-blind solution containing either 10mg of droperidol or placebo. The need for further medication (5mg of haloperidol after 3 minutes or individually adapted psychotropics after 30 minutes) was used as a parameter for the evaluation of the results. Three minutes after the injection, haloperidol was needed by only 6 out of 19 patients of the droperidol group, but by 19 patients of the control group. Thirty minutes after the first injection, further medication was needed by only 4 droperidol patients and 10 placebo patients. No side-effects could be attributed to the double-blind medication. It is concluded that the treatment schedule used (10mg droperidol intravenously, possibly followed by 5mg haloperidol intramuscularly) is suitable for use in psychiatric emergencies. 8 references. (Journal abstract modified)

000663 Vestergaard, Per.; Baastrup, P. C.; Petersson, Holger. Psychopharmacologic Institute, Psychiatric Hospital in Arhus, DK-8240, Risskov, Denmark **Lithium treatment of Huntington's chorea: a placebo-controlled clinical trial.** Acta Psychiatrica Scandinavica (Kobenhavn). 56(3):183-188, 1977.

The therapeutic effect of lithium in Huntington's chorea was tested in six patients through a double-blind crossover comparison of lithium and placebo, each administered for 6 weeks. Four of the patients received neuroleptic drugs at the same time. Lithium and placebo periods did not differ as regards motor skills, hyperkinesias, or total ward situation, all rated quantitatively with the use of scales. It is concluded that lithium does not seem to be of therapeutic value in Huntington's chorea. 12 references. 12 references. (Author abstract)

000664 Wajsbort, J. Department of Neurology, Poliklinic Lynn, Haifa, Israel **/The off-on phenomenon during treatment of Parkinson's disease with levodopa./** Zur Frage des Off-On-Effektes bei Levodopa-Behandlung des Parkinsonismus. Journal of Neurology (Berlin). 215(1):59-66, 1977.

Influence of a low protein diet on Parkinsonian patients (n=23) manifesting the off/on phenomenon during treatment with levadopa was examined. All patients had been pretreated with L-dopa for 5 to 8 years and had taken Dopadecarboxylase inhibitor for a minimum of 3 years. Protein intake was limited to 25g/day (which is less than 0.5g/kg body weight) for 1 to 4 months. Six cases showed marked improvement with reduction of the off/on effect, while in one case this effect disappeared completely. A distinct improvement of general capability was seen in the other five cases, and an objective improvement of symptoms was noted, with the exception of the off period. No response could be observed in the remaining 12 cases. All cases with hyperkinesia showed an augmentation of this symptom during the use of the diet. The diet restriction was not found to be correlated with age, stage, duration of illness, duration of Dopa treatment. 28 references. (Journal abstract modified)

000665 Werry, John S. Department of Psychiatry, School of Medicine, University of Auckland, P.B., Auckland, New Zealand **The use of psychotropic drugs in children.** Journal of the American Academy of Child Psychiatry. 16(3):446-468, 1977.

The clinical use, methods of evaluation, safety and efficacy of psychotropic drugs in children are reviewed. It is concluded that only the stimulants have a clearly established place, but that the less studied antidepressant and antipsychotic drugs almost certainly have a place too. While the rather ill defined hyperkinetic syndrome is the condition indicated for drug therapy, other diagnostic entitites, notably unsocialized, aggressive, and overanxious reactions, Gilles de la Tourette syndrome, school phobia, and the childhood psychoses appear to be drug responsive in some cases. Only an empirical trial of medication can answer the question of the role of pharmacotherapy in the management of the individual child. The substantial growth of pharmacotherapy in the last 5 years calls

for a more medical and scientific approach to its use in children. 78 references. (Author abstract)

000666 West, Hugh H. 3138 Paty Dr., Honolulu, HI 96822 **Treatment of spasmodic torticollis with amantadine: a double-blind study.** Neurology. 27(2):198-199, 1977.

A study of the treatment of spasmodic torticollis with amantadine is presented in a double-blind crossover trial in which 10 patients participated for a period of 2 months. A further regimen of combined amantadine and haloperidol was tried with three patients after the conclusion of the double-blind trial. There were no therapeutic benefits of either treatment. Half the patients reported minor side-effects that resolved promptly when amantadine was discontinued. 17 references. (Journal abstract modified)

000667 Whitehead, William E.; Blackwell, Barry; Robinson, Ann. Department of Psychiatry, University of Cincinnati College of Medicine, 231 Bethesda Ave., Cincinnati, OH 45267 **Why physicians prescribe benzodiazepines in essential hypertension: a phase IV study.** Biological Psychiatry. 12(4):597-601, 1977.

A study was conducted to determine whether benzodiazepines are prescribed to hypertensives because of concurrent psychological complaints or because of recent elevation in blood pressure or both. Results suggest that psychological complaints in hypertensive patients (N=32) reliably lead to prescription of tranquilizers and that such prescribing is followed by a reduction in psychological complaints. The fact that only 34% of the benzodiazepine group had psychological complaints suggests that physicians may have had other reasons for prescribing benzodiazepines in 66% of the patients. More patients who were prescribed benzodiazepines had shown a large increase in diastolic pressure since the last visit, which suggests that benzodiazepines are also prescribed because physicians believe they lower blood pressure. Prescription of benzodiazepine was followed by a blood pressure reduction in 62% of the cases. The reduction in diastolic pressure was independent of changes in other medication. 3 references.

000668 Wiener, P. C.; Hogg, M. I. J.; Rosen, M. University Hospital of Wales, Cardiff CF4 4XW, Wales **Effects of naloxone on pethidine-induced neonatal depression: Part I -- intravenous naloxone.** British Medical Journal (London). No. 6081:228-229, 1977.

The effectiveness of intravenous naloxone was compared to isotomic saline control solution in relieving pethidine induced slowing of infants' recovery from birth asphyxia was tested in a double-blind study. Peak alveolar carbon dioxide tension, carbon dioxide excretion, alvolar ventilation, feeding behavior, and habituation to a specific sound stimulus were measured regularly up to 48 hours after birth. Alveolar carbon dioxide tension was significantly lower and alveolar ventilation significantly higher half an hour after birth in the naloxone treated group than in the saline treated group, but these differences between the groups were not significant at any other time, and there were no significant differences in sucking frequency or pressure, milk consumption, or habituation to the auditory stimulus. 13 references. (Author abstract modified)

000669 Wiener, P. C.; Hogg, M. I. J.; Rosen, M. University Hospital of Wales, Cardiff CF4 4XW, Wales **Effects of naloxone on pethidine-induced neonatal depression: Part II - intramuscular naloxone.** British Medical Journal (London). No. 6081:229-231, 1977.

The effectiveness of intramuscular naloxone was compared to normal saline (control) in reversing pethidine induced neonatal depression in 30 full-term infants whose mothers had had pethidine during labor. The drugs were chosen blindly and administered within one minute of birth. Naloxone produced a significant reduction in mean alveolar carbon dioxide tension and an increase in carbon dioxide excretion and mean alveolar ventilation at all times up to 48 hours after birth. The mean rate of habituation to a repeated auditory stimulus, the mean sucking frequency, the sucking pressure, and the mean consumption of milk were all significantly higher in the naloxone treated group than in the placebo treated group up to 48 hours after birth. Intramuscular naloxone therefor seemed to reverse the undesirable effects of pethidine on the nervous system and orienting reflexes of newborn infants. 6 references. (Author abstract modified)

000670 Wode-Helgodt, B.; Alfredsson, G.; Borg, S.; Fyro, B.; Sedvall, G. Psykiatriska kliniken, St. Gorans sjukhus, S-112 81 Stockholm, Sweden /**Clinical effects of treatment with chlorpromazine and the pharmacokinetic and pharmacodynamic prameters./** Klinisk behandlingseffekt av klorpromazin och nagra farmakokinetiska och farmakodynamiska parametrar. Nordisk Psykiatrisk Tidsskrift (Kungsbacka). 30(7):500-506, 1977.

The correlation between the treatment effect of chlorpromazine and the pharmacokinetic and pharmacodynamic parameters was studied in a sample of psychotic patients and healthy persons. During a placebo period, plasma and cerebrospinal fluid (CSF) were examined. At the end of the placebo period a global score rater evaluated the severity of illness. Chlopromazine was given randomly in doses of 200mg, 400mg, and 600mg, and after 2 and 4 weeks the tests were repeated. The results show that the global score dropped significantly after 2 and 4 weeks and a correlation between dosage and the level of chlorpromazine in CSF was established. A significant correlation between the level of chlorpromazine in CSF and the change in global score was also found. The pharmacodynamic parameters examined in CSF were homovanillic acid (HVA), 3-methoxy-4-hydroxyphenyl-ethyleneglycol (MOPEG) and 5-hydroxyindoleacetic acid (5-HIAA). With treatment of chlorpromazine HVA increased significantly while the levels of MOPEG and 5-HIAA decreased. 3 references.

000671 Wulbert, Margaret; Dries, Robert. San Diego Community Health Services, P.O. Box 3067, San Diego, CA 92103 **The relative efficacy of methylphenidate (Ritalin) and behavior-modification techniques in the treatment of a hyperactive child.** Journal of Applied Behavior Analysis. 10(1):21-31, 1977.

Drug versus placebo effects were contrasted with those of contingency management in the treatment of an 8-year-old hyperactive child. Several criterion behaviors were monitored in two different settings to gauge the breadth and generalizability of drug and behavior management effects. Medication and contingency management effects were both found to be situation specific. No interaction effects were found. Accuracy of task performance, amount of eye contact with the experimenters, frequency of repetitive hand movements, and distractible behavior were apparently unaffected by medication (Ritalin versus placebo) within the clinic. A multiple baseline design incorporating contingency reversals revealed the reinforcement contingencies to be the crucial variable controlling behavior within the clinic. Medication effects were shown to be significant within the home setting where reinforcement contingencies were not changed. While aggressive behavior

decreased as a function of Ritalin, repetitive hand movements increased. It is emphasized that the idiosyncratic nature of drug effects for any particular child require monitoring several simultaneous dimensions. 21 references. (Author abstract)

12 PSYCHOTOMIMETIC EVALUATION STUDIES

000672 Bowers, Malcolm B., Jr. Department of Psychiatry, Yale University School of Medicine, 333 Cedar St., New Haven, CT 06510 **Psychoses precipitated by psychotomimetic drugs: a follow-up study.** Archives of General Psychiatry. 34(7):832-835, 1977.

Fifteen patients who developed prolonged psychotic reactions following psychotominetic drug use (probably primarily LSD) were followed up 1.9to 5.8years later. Two patients had committed suicide. Apprroximately half of the patients had a relatively good outcome and half did poorly. Aspects of the initial clinical picture that correlated with outcome measures are discussed. The possibility is considered that vulnerability to a prolonged psychotic reaction following psychotomimetic drug use may be related to a genetic vulnerability to illnesses in the manic-depressive/schizoaffective spectrum. In some instances this vulnerability may implicate central serotonergic neuronal systems. 14 references. (Author abstract)

000673 Chesher, G. B.; Franks, H. M.; Jackson, D. M.; Starmer, G. A.; Teo, R. K. C. Department of Pharmacology, University of Sydney, N.S.W. 2006, Australia **Ethanol and delta9-tetrahydrocannabinol: interactive effects on human perceptual, cognitive and motor functions. II.** Medical Journal of Australia (Glebe). 1(14):478-481, 1977.

Fifteen paid student volunteers (10 male, 5 female) were used in a double-blind crossover experiment to further investigate the effects of delta9-tetrahydrocannabinol (THC), alone and in combination with ethanol, on perceptual, cognitive and motor functions. Both ethanol (0.54g/kg) and THC (15mg/70kg) were given orally. Ethanol was not very effective in influencing performance but this dose of THC produced marked decrements, predominantly in the latter part of the experiment. When they were given together, an early additive effect was apparent, but later, there was a suggestion of antagonism in that subjects who received the drug combination performed better than those who were given THC alone. The interaction between THC and ethanol is considered to be complex. 13 references. (Author abstract)

000674 de Rios, Marlene Dobkin; Smith, David E. California State University, Fullerton, CA **The function of drug rituals in human society: continuities and changes.** Journal of Psychedelic Drugs. 9(3):269-275, 1977.

The functions served by ritualized drug use are examined and the adaptive and maladaptive results of ritualization in traditional primitive cultures and in American society are discussed. Ritualized drug use may serve as: 1) a dramatization of cultural needs; 2) a spiritual, cognitive, or cultural transformation agent; 3) a form of therapy or antitherapy; 4) a means of salvation; 5) a form of subgroup identification; 6) an adjunct to rites of passage; 7) a means of transmitting and preserving culture; and 8) a communication event and facilitator of social interactions. In general, rituals provide a set of social sanctions through their structure and mythology which maintain controlled use of the drug and aid in eliminating or ameliorating physiological or psychological adverse effects. It is suggested that many of the maladaptive aspects of American drug rituals may stem in part from legal sanctions against drug use, and the unpreparedness for a particular drug experience. 27 references.

000675 du Toit, Brian M. University of Florida, Gainesville, FL **Historical and cultural factors influencing cannabis use among Indians in South Africa.** Journal of Psychedelic Drugs. 9(3):235-246, 1977.

Historical and cultural factors influencing cannabis use among Indian migrants to South Africa are outlined, and results of a recent preliminary survey on cannabis use are presented. Early Indian immigrants brought with them a long tradition of cannabis use for medical, veterinary, social, and religious purposes. Due to an inability to integrate with other populations in South Africa, the Indian population has retained many of its sociocultural ties to India indicating a continuity of belief and behavior. A recent survey indicated widespread cannabis use among the Indian population in Natal, South Africa. It was found that the preferred method of smoking cannabis in a pipe (chillum) has been largely retained, and its use in religious rituals and social contexts retains many of the characteristics which were present in India. No examples, however, were found of its medicinal use, reliance being placed rather on modern therapeutic agents. It is concluded that a mixture of traditional and adopted patterns of cannabis use is to be found in this population. 18 references.

000676 Furst, Peter T. Anthropology Department, SUNY in Albany, Albany, NY 12222 **"High states" in culture-historical perspective.** In: Zinberg, N., Alternate states of consciousness. New York, Free Press, 1977. 294 p. (p. 53-88).

A cultural/historical perspective on the induction of high states by means of ritual and ingestion of psychoactive substances is presented. Systems which value and encourage personal encounters with the supernatural and esteem the therapeutic properties of ecstatic or high states of mood are contrasted with contemporary Western religious, medical, and political systems. Topics discussed include: Shamanism, old world bases of new world religions, divergence between new world and old world religions, archeological evidence on hallucinogen use in the new world, nonchemical routes to high states, and a biochemical explanation of nonhurtful pain.

000677 Glover, Vivette; Sandler, M.; Owen, F.; Riley, G. J. Bernhard Baron Memorial Research Laboratories, Queen Charlottes Maternity Hospital, London W6 OXG, England **Dopamine is a monoamine oxidase B substrate in man.** Nature (London). No. 5589:80-81, 1977.

The apparently conflicting observations that: 1) dopamine is preferentially deanimated by monoamine oxidase A in rats, and 2) addition of the monoamine oxidase B inhibitor, deprenil, to a dopamine generating drug combination produces further therapeutic benefits in the treatment of Parkinsonism, are reconciled by a demonstration that, so far as dopamine oxidation is concerned, man may be different from the rat. In two sites that were investigated -- platelet and brain -- it was found that dopamine is preferentially deanimated by an enzyme with the characteristics of monoamine oxidase B. The striatal enzyme was found to have properties such that the addition of deprenil to a central dopamine generating drug regimen is indicated as a rational treatment of Parkinsonism. 20 references.

000678 Rhead, John C. Maryland Psychiatric Research Center, Box 3235, Baltimore, MD 21228 **The use of psychedelic drugs in the treatment of severely disturbed children: a review.** Journal of Psychedelic Drugs. 9(2):93-101, 1977.

The use of psychedelic drugs in treatment of severely disturbed children, particularly child schizophrenics, is

reviewed to evaluate the relative safety and therapeutic potential of such treatment. Studies using such drugs as LSD and psilocybin are cited, and it is noted that to date the worst outcome reported from such studies is no improvement. The therapeutic promise of LSD in the context of brief, intensive psychotherapy is emphasized. Further research is viewed as necessary to determine the degree to which that promise can be reliably fulfilled. 54 references.

000679 Richards, William A.; Rhead, John C.; DiLeo, Francesco B.; Yensen, Richard; Kurland, Albert A. Maryland Psychiatric Research Center, Box 3235, Baltimore, MD 21228 **The peak experience variable in DPT-assisted psychotherapy with cancer patients.** Journal of Psychedelic Drugs. 9(1):1-10, 1977.

A series of studies concerning the peak experience variable in dipropyltryptamine (DPT) assisted psychotherapy with cancer patients is reviewed. Subjects received a single administration of DPT, a short acting psychedelic drug, in the context of a mean of 20 1/2 hours of psychotherapy, spread over 4 to 5 weeks, and measures of peak experiences were administered. Test data generally indicated clinical improvement of greater magnitude for the group of peakers than for nonpeakers. Clinical impressions would suggest that, when a peak experience does occur, its continuing relevance for daily living may be strongly dependent on the degree to which the associated insights are assimilated or transferred into the everyday self-concept and worldview of the patient. 28 references.

000680 Schultes, Richard Evans. Botanical Museum, Harvard University, Cambridge, MA **The botanical and chemical distribution of hallucinogens.** Journal of Psychedelic Drugs. 9(3):247-263, 1977.

An overview of the botanical and chemical distribution of hallucinogens is presented in a categorical listing of plant species together with background information on their preparation, and religious or sociocultural uses. The large proportion of psychoactive drugs are to be found among the fungi and angiosperms. Nonnitrogenous compounds include: dibenzopyrans which include cannabis; phenylpropenes which include nutmeg and mace; and alcohol obtained from Lagochilus inebrians. Nitrogenous compounds, by far the most numerous, include: the ergolines; beta-carbolines; iboga-indoles; isoxazoles; isoquinolines; phenylethylamines; quinolizidines; tropanes; and tryptamines. An additional listing of psychoactives of uncertain use or chemical composition is also included. 182 references.

000681 Shulgin, Alexander T. 1483 Shulgin Road, Lafayette, CA 94549 **Profiles of psychedelic drugs: 4. harmaline.** Journal of Psychedelic Drugs. 9(1):79-80, 1977.

A profile of harmaline, a psychedelic drug, is presented, including history, human biochemistry and pharmacology, human psychopharmacology, and legal status. This beta-carboline alkaloid is a component of a number of plants of well established pharmacological activity, including a number of species of the genus Banisteriopsis (in particular, caapi and inebrians) and the seed of the Syrian rue (Peganum harmala). The modality most consistently affected by harmaline is the visual sense. In psychotherapeutic studies, harmaline has often been used in conjunction with other psychedelic drugs in order to prolong and otherwise modify the effects.

000682 Valentine, J. L.; Bryant, Paul J.; Gutshall, Paul L.; Gan, Owen H. M.; Lovegreen, Patricia D.; Thompson, Everett D.; Niu, Hsien Chi Bio-Analytics Laboratory, School of Pharmacy, University of Missouri, Kansas City, MO 64108 **High-pressure liquid chromatographic-mass spectrometric determination of delta9-tetrahydrocannabinol in human plasma following marijuana smoking.** Journal of Pharmaceutical Sciences. 66(9):1263-1266, 1977.

A chromatographic and spectrometric methodology, developed to analyze delta9-tetrahydrocannabinol (I), a psychotomimetic constituent of marijuana smoke, in human plasma is described. The developed method utilizes a high pressure liquid chromatographic (HPLC) gradient elution program to separate I from the other major cannabinoids in marijuana smoke. To achieve the sensitivity required to detect I in human plasma following marijuana smoking, a mass spectrometric quantification method was developed to analyze the HPLC eluant. To 1ml of human plasma was added a known amount of internal standard, trideuterated I. This stable isotope provided a check on extraction efficiency, a marker for UV monitoring of the HPLC effluent and subsequent collection, and a convenient mass for mass spectrometric quantification. An ion counting technique was used in conjunction with the peak matching accessory of the mass spectrometer to provide for a rapid comparison between molecular ions of I and the internal standard. The method was linear, accurate, and reproducible over the concentration range expected for I in plasma following marijuana smoking; 2.5ng/ml was the lower practical limit of detection. Plasma from 11 male subjects was analyzed by the method at appropriate intervals up to 24 hr after the smoking of a marijuana cigarette containing 10.8mg of I. Results demonstrated that levels of I could be determined accurately in the plasma of marijuana smokers in the 1 hr period following smoking. 12 references. (Author abstract modified)

000683 von Glascoe, Christine; Metzger, Duane; Palomino O., Aquiles; Vargas P., Ernesto. University of California, Irvine, CA **Are you going to learn to chew coca like us?** Journal of Psychedelic Drugs. 9(3):209-219, 1977.

The socialization to coca use and its functions in adulthood among speakers of Quechua in Combapata, Peru are examined. A three stage normative model of coca socialization is presented. In the first stage, concepts of coca use are included in the autotelic imitative play of children and are fostered by the permissive and tolerant stance of the parents and other socializing agents. In the second stage, the child's coca mastication becomes, through the intervention of the adults, situated within the context of the means/ends schema of adult usage with a primary emphasis on the use of coca to meet daily practical physiological needs. In the third stage, the young adult assumes responsibility for his own uses of coca within the coca doctrine. These uses may include: 1) facilitation of performance especially in work; 2) facilitation of social interaction; 3) reduction of subjective response to illness, pain, and psychological stress; 4) mediation between the individual and the ultimate forces which animate his universe; and 5) prognostication and expanded awareness of realities outside the normal range of human perceptual and cognitive capabilities. 15 references.

000684 Weil, Andrew T. Harvard Botanical Museum, Cambridge, MA 02138 **/Three experiences that can alter the state of consciousness./** The marriage of the sun and moon. In: Zinberg, N., Alternate states of consciousness. New York, Free Press, 1977. 294 p. (p. 37-52).

In this chapter in a volume on alternate states of consciousness, the intrapsychic dynamics that lead to the ex-

perience of nonordinary consciousness are discussed together with the evolutionary significance of a postulated innate drive to change consciousness. Three experiences that can alter states of consciousness: 1) direct observation of total eclipses of the sun, 2) ingestion of psychoactive mushrooms, and 3) participation in the ritual of the Indian sweat lodge; allthree are described and analyzed. Although specific external triggers, such as drugs, may elicit these states, they arise from purely intrapsychic forces. It is suggested that students of consciousness demonstrate in their own lives and work the goal of opening the channel between the two minds -- ordinary consciousness and alternative states of consciousness.

13 MECHANISM OF ACTION: PHYSIOLOGICAL, BIOCHEMICAL AND PHARMACOLOGICAL

000685 Alvan, Gunnar; Siwers, Bo; Vessman, Jorgen. Departments of Clinical Pharmacology and Psychiatry, Karolinska Institute, Huddinge Hospital, S-14186 Huddinge, Sweden **Pharmacokinetics of oxazepam in healthy volunteers.** Acta Pharmacologica et Toxicologica (Kobenhavn). 40(Supplement 1):40-51, 1977.

The pharmacokinetics of oxazepam was studied in healthy human volunteers. When oral doses of 15 mg were given to eight subjects on two occasions 2.5years apart the individual areas under the plasma concentration time curves did not differ significantly. The urinary recovery of oxazepam conjugates was 67% of the dose given and the total recovery including fecal oxazepam was 70%. On multiple dosing (5mg t.i.d.)stable steady state concentrations were established. There was a tendency for slightly lower steady state concentrations than predicted from single oral doses. During steady state 86% of the dose was recovered in the urine over a 24 hour period. 16 references. (Author abstract)

000686 Beckmann, Helmut; Murphy, Dennis L. Department of Psychiatry, University of Munich, Munich, Germany **Phenelzine in depressed patients: effects on urinary MHPG excretion in relation to clinical response.** Neuropsychobiology (Basel). 3(1):49-55, 1977.

Individual differences in 3-methoxy-4-hydroxyphenylglycol (MHPG) changes in response to phenelzine treatment were investigated in depressed patients. Treatment of patients with the monoamine oxidase inhibiting antidepressant, phenelzine, produced a marked reduction in urinary MHPG excretion. Pretreatment levels of urinary MHPG and platelet monoamine oxidase activity were significantly correlated with each other, but the magnitude of the reduction produced by phenelzine treatment did not correlate as closely. Similarly, MHPG levels were not significantly different in patients with antidepressant responses to the drug compared to nonresponders. 22 references. (Author abstract modified)

000687 Bellward, Gail D.; Warren, P. M.; Howald, W.; Axelson, James E.; Abbott, Frank S. Division of Pharmacology and Toxicology, University of British Columbia, Vancouver, B.C. V6T 1W5, Canada **Methadone maintenance: effect of urinary pH on renal clearance in chronic high and low doses.** Clinical Pharmacology and Therapeutics. 22(1):92-99, 1977.

A comparison of the plasma levels and renal clearance of methadone between patients on high 80 to 110mg/day and those on low 15 to 40mg/day doses of methadone in 12 male patients stabilized on methadone for many months was made. A general trend to higher renal clearance was seen in the high dose group, but on more detailed examination there was a direct correlation only when the patients were categorized by urinary pH. At low pHs, there was nearly a threefold increase in renal clearance which was associated with a decreased major metabolite to methadone ratio. No evidence for a difference in rate of metabolism between the two groups was found nor were there differences in hepatic function. It was concluded that urinary pH was a major factor in renal clearance of methadone. 16 references. (Journal abstract modified)

000688 Boulougouris, John; Liakos, Aris; Stefanis, Costas; Dornbush, Rhea; Panayiotopoulos, C. P. Department of Psychiatry, University of Athens School of Medicine, Athens, Greece **Withdrawal from cannabis: psychophysiological changes.** In: Stefanis, C., Hashish: studies of long-term use. New York, Raven Press, 1977. 181 p. (p. 135-145).

A study of the physiological and subjective effects of the cessation of ad libitum smoking of marihuana in Greek subjects with a long history of hashish use is reported. During a 6 day hospitalization, half of the subjects smoked marihuana ad libitum for 30 min twice daily for 3 days followed by placebo for 3 days, while the remainder of the subjects received the placebo first. The measurements taken were electroencephalogram (EEG), pulse rate, finger pulse volume, respiration rate, temperature, blood pressure, pupil diameter, and self-ratings of the high and pleasure felt after smoking. Marihuana produced increases in pulse rate which persisted for at least 4 hr, but which decreased progressively during the 3 day period. Marihuana also produced some alterations in EEG frequencies, but these effects were not related to the order in which marihuana was given or to the days of smoking. Respiration rate increased during the second 3 day period regardless of whether marihuana or placebo was being smoked. Temperature was higher after marihuana administration; this increase was larger when marihuana was smoked after placebo. Because more marihuana was consumed following the placebo period, it is suggested that temperature fluctuations may be directly influenced by the quantities of delta9-tetrahydrocannabinol consumed. Significant drug, drug sequence, and drug sequence by day interactions was found for fluctuations in finger pulse volume. Marihuana, or cessation of marihuana, did not affect pupil size. Self-ratings of the high and pleasure felt after smoking marijuana were higher when marihuana was smoked following the placebo period. Ratings were also higher after the second daily smoking session, although less drug was consumed, suggesting that the quantities consumed during the first and second sessions may be additive. Systolic and diastolic blood pressure rose on the second day of marihuana smoking and decreased on the third day of marihuana smoking. With placebo, blood pressure decreased consecutively over the 3 days. Some differences in these parameters were noted when testing was performed 2 hr after a smoking session as opposed to directly after the session. The implications of these findings for the development of tolerance, physical dependence, and withdrawal symptoms in chronic hashish users are discussed.

000689 Brown, Walter Armin. Neuroendocrine Research Laboratory, Veterans Administration Hospital, Davis Park, Brown University, Providence, RI 02908 **Psychologic and neuroendocrine response to methylphenidate.** Archives of General Psychiatry. 34(9):1103-1108, 1977.

In a study examining the interface between neurochemical activity, psychological state, and neuroendocrine regulation, the psychological state and serum growth hormone (GH) and cortisol levels were monitored in 17 subjects following administration of methylphenidate hydrochloride, a drug that appears to preferentially affect central dopamine regulation.

While individuals varied in both their endocrine and psychologic responses to methylphenidate, the general effects were found to be GH elevation, euphoria, and activation with elation, the most pronounced psychologic effect. It is concluded that elation and GH release following administration of methylphenidate may be mediated by the same neurochemical events. 23 references. (Author abstract modified)

000690 Capetola, R. J.; Gero, A. Hahnemann Medical College, Philadelphia, PA 19102 **Interactions of narcotics and their antagonists with human serum esterase. VI: the behavior of 14-hydroxylated morphine derivatives.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 225(2):208-220, 1977.

A sixth paper in a series investigating how opiates and their derivatives act on human serum esterase either as competitive inhibitors, or as accelerators through allasteric sites, or both is presented. Study of the interaction of 14-hydroxylated morphines and morphinans with human serum esterase revealed behavior similar to that of other morphine derivates as shown by similar acceleratory efficacies and affinity constants. However, 14-hydroxydihydro-6-morphinones showed anomalously low apparent affinities and anomalously high apparent efficacies, while at the same time seemingly intefering with the attachment of another drug to the enzyme. These anomalies are satisfactorily explained by assuming a second receptor site for which only the hydroxyketones have affinity and which interacts with the receptor site common to all opiates and opiate antagonists. Equations derived from this assumption allow the determination of the parameters of the interactions of drugs with both receptor sites. 13 references. (Author abstract modified)

000691 Carroll, B. J.; Feinburg, M. P. Department of Psychiatry and Mental Health Research Institute, University of Michigan, Ann Arbor, MI 48109 **Intracellular lithium.** Neuropharmacology (Oxford). 16(7/8):527, 1977.

In a paper presented at the Proceedings of the British Association for Psychopharmacology, July, 1976, Cambridge, England, intracellular lithium levels in erythrocytes and extracellular levels in plasma were determined in 94 patients treated with lithium carbonate to obtain information useful for management of clinical therapy with lithium. A wide sample of intracellular and extracellular lithium ratios with a unimodal distribution was found. Patients with neuroses or character disorders had ratios significantly lower than patients with schizophrenia or primary affective disorders. The ratios in unipolar depressives were no different from those in bipolar depressives and manics. In most patients, the ratio was stable over long time periods, and some patients showed a progressive increase in their ratios. Of 25 patients treated for depression with lithium carbonate, 7 of 10 bipolars improved compared with 6 of 15 unipolars, with improving patients having comparable dosages, plasma lithium levels, intracellular lithium levels, and intracellular/extracellular ratios. Symptoms of lithium neurotoxicity developed in some patients with some relation to intracellular/extracellular lithium ratios and intracellular lithium levels. The intracellular/extracellular lithium ratio was also useful in monitoring compliance. While results provided useful information for clinical management of lithium therapy, they did not indicate that intracellular levels and intracellular/extracellular ratios of lithium can distinguish bipolar from unipolar subjects nor that they can predict an antidepressant response to lithium. (Author abstract modified)

000692 Casali, L.; Pozzi, E.; Rampulla, C.; Serra, R. Institute of Tuberculosis and Respiratory Diseases, University of Pavia, Pavia, Italy **Psychotropic drugs: influence on respiratory function.** International Journal of Clinical Pharmacology and Biopharmacy (Munchen). 15(10):480-484, 1977.

The action of two anxiolytic drugs (diazepam and trazodone) on ventilatory function and on the associated respiratory function was investigated in 22 normal subjects and 22 bronchopneumopathic patients. The analyses carried out before drug administration and 1, 2, 6 hours later showed that while a drug did not cause any important variation in the ventilatory parameters and O2 uptake, both in healthy subjects and in patients, the second one clearly reduced the ventilatory efficacy and O2 uptake. This behavior was quite evident 1 and 2 hours after the assumption of the drug while after 6 hours the parameters returned to the initial values. The influence of the circadian rhythm after 6 hours was more evident in both groups after the assumption of the second anxyolitic drug than with the first. Furthermore, evaluation drawn up among the healthy subjects, during simulated driving tests, demonstrated that the second anxyolytic drug provoked a standard depression unevenly distributed like that obtained after the ingestion of a fixed dose of an alcoholic drink. Study indicates that it is possible to control, patient by patient, the actual individual response to the action of an anxiolytic drug and to choose the one more suitable for him. 15 references. (Author abstract)

000693 Chang, S. S.; Pandey, G. N.; Casper, R.; Garver, D.; Davis, J. M. Illinois State Psychiatric Institute, Chicago, IL 60612 **Predicting the optimal lithium dosage.** Clinical Pharmacology and Therapeutics. 21(1):100, 1977.

The pharmacokinetics of lithium was investigated in acute single dosage and in chronic steady state studies to determine whether the optimal dosage requirements and the red blood cell/plasma lithium ratios could be predicted from single dose kinetics. Results were reported at the 78th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, Dallas, 1977. Blood samples were collected at 2, 4, 7, 9, 12, 15, 25, and 31 hr after the priming dose of 900mg lithium carbonate. Lithium carbonate was then given in a dose of 300mg t.i.d.,and this dosage was increased 300mg each 3rd day until a therapeutic plasma concentration was obtained. Steady state lithium plasma concentration correlated well with initial 12 hr and 25 hr plasma concentration and the predicted steady state plasma concentration. Red blood cell/plasma lithium ratios measured at the 15th hr after the priming dose correlated significantly with the ratios observed at steady state. It is concluded the optimal lithium dosage may be predicted by using the 12 hr or 25 hr plasma concentration after the priming dosage as an index.

000694 Costa, Jonathan L.; Murphy, Dennis L.; Smith, Mark A.; Pettigrew, Karen D. Clinical Neuropharmacology Branch, NIMH, 9000 Rockville Pike, Bethesda, MD 20014 **Effects of antimycin A plus 2-deoxyglucose on uptake and vesicular storage of serotonin in human platelets. (Unpublished paper).** Bethesda, MD, NIMH, 1977. 6 p.

To examine the effects of antimycin A plus 2-deoxyglucose on uptake and vesicular storage of serotonin (H3-5HT) in human platelets, plasma membrane uptake of H3-5HT and platelet release of dense bodies were measured at varying incubation periods. Results showed that within 15 seconds after the addition of the metabolic isons, H3-5HT begins to move from vesicles into the cytoplasm; by 30 minutes after poison addition, essentially all the platelet 5-HT appears to be cytoplasmic. The metabolic poisons also act rapidly to

decrease plasma membrance uptake of H3-5HT from the extracellular medium by approximately 20% whithin 1 minute after their addition. This may represent a direct effect rather than one resulting from altered cytoplasmic or vesicular 5HT, since platelets with less than 10% of the normal number of vesicular storage sites exhibit a similar reduction after addition of the metabolic poisons. 11 references. (Author abstract modified)

000695 Crown, Peter; Dornbush, Rhea; Volavka, Jan. Department of Psychiatry, New York Medical College, New York, NY 10029 **Intercorrelations between physiological and psychological effects of marijuana, hashish, and THC-delta9 in long-term hashish users.** In: Stefanis, C., Hashish: studies of long-term use. New York, Raven Press, 1977. 181 p. (p. 95-101).

A study is reported in which Greek subjects with a long history of hashish use received high doses of cannabis preparations in order to assess the relationships between the physiological (as measured by electroencephalogram (EEG) and heartrate) and psychological (as indicated by self-ratings of high and pleasure and of the price the subjects were willing to pay for what they had just smoked) effects of the substances. The drugs used were: 1) marihuana containing 78mg of delta9-tetrahydrocannabinol (delta9-THC); 2) hasish containing 90mg of delta9-THC; 3) hashish containing 180mg of delta9-THC; 4) 100mg of pure delta9-THC mixed with tobacco; and 5) placebo. Heartrate increases were related to self-ratings of high and pleasure and were independent of drug. The EEG measures, self-ratings, and price willing to pay were dependent on drug and dose. The heartrate increase was not linearly related to the dose, suggesting an interaction between delta9-THC and cannabidiol in hashish and in marihuana.

000696 Ericksen, S.; Dorus, E.; Dekirmenjian, H.; Segal, N.; Davis, J. M. Illinois State Psychiatric Institute, Chicago, IL 60612 **Interindividual variability in diazepam metabolism: preliminary evidence of an absence of genetic control.** Clinical Pharmacology and Therapeutics. 21(1):102, 1977.

The contribution of genetic factors to interindividual variation in half-life and plasma level of diazepam was studied and the results were reported at the 78th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, Dallas, 1977. Seven normal male monozygotic twin pairs and seven dizygotic twin pairs were given a single oral dose of 10mg diazepam, and blood samples were collected at frequent intervals over a 24 hr period and at 48 hr. Peak plasma diazepam concentrations occurred at a range from 1/2 to 2 1/2 hr with a modal time of 1 hr. The half-life ranged from 20 to 99 hr, and the plasma level ranged from 28 to 139ng/ml. Dizygotic twins did not vary more than monozygotic twins in time of peak plasma concentration, half-life, or plasma level, suggesting that nongenetic factors play an important role in the metabolism of diazepam.

000697 Feller, K.; le Petit, G. Institute of Clinical Pharmacology, Medical Academy "Carl Gustav Carus," DDR-80 Dresden, Germany **On the distribution of drugs in saliva and blood plasma.** International Journal of Clinical Pharmacology and Biopharmacy (Munchen). 15(10):468-469, 1977.

The equilibration of drug concentrations between blood plasma (unbound part) and saliva was studied for selected drugs with different physicochemical properties: quindine, sulfamerazine, paracetamol, diazepam and ethanol. From these and other experimental results is is suggested that: 1) the concentration ratio between saliva and blood plasma (unbound) can only equal one for basic drugs with a pKa lower than 5.5and acid drugs with a pKa higher than 8.5and for pH indifferent drugs; and 2) the drug must have a sufficient permeation ability through lipid membranes, valuable by the lipid water partition coefficient. 2 references. (Author abstract)

000698 Friedhoff, Arnold J.; Park, Sanghae; Schweitzer, Jack W.; Burdock, Eugene I.; Armour, Mary. Millhauser Laboratories, Department of Psychiatry, New York University School of Medicine, New York, NY **Excretion of 3,4-dimethoxyphenethylamine (DMPEA) by acute schizophrenics and controls.** Biological Psychiatry. 12(5):643-654, 1977.

To further elucidate the relationship of presence of 3,4-dimethoxyphenethylamine (DMPEA) in urine and the occurrence of schizophrenia, levels of excretion of DMPEA were studied in 64 schizophrenics and 38 controls. DMPEA, measured quantitatively in urine of normal subjects, acute schizophrenic, and nonschizophrenic psychiatric patients, was found to be significantly higher in drug free schizophrenics than in normal subjects. Chlorpromazine administration decreased the level of DMPEA. A behavioral index of psychopathology was found to be correlated with DMPEA level. The finding of DMPEA schizophrenic levels in a few controls, and vice versa, is seen to preclude the possibility that high urinary DMPEA is a necessary or sufficient factor in the development of schizophrenia; an association with vulnerability and personality characteristic of schizophrenia is suggested. 28 references. (Journal abstract modified)

000699 Fu, Tsu-Ker; Jarvik, Lissy F.; Yen, Fu-Sun; Matsuyama, Steven S. Psychogenetics Unit, Veterans Administration Hospital, Brentwood, CA **In vitro effects of imipramine on proliferation of human leukocytes.** Archives of General Psychiatry. 34(6):728-730, 1977.

The effects of imipramine hydrochloride on cell proliferation were investigated in leukocyte cultures derived from normal volunteers. Nine different doses of imipramine were added in vitro at random for 4, 24, 48, and 68 hours, the three lowest concentrations being within the range of plasma levels reported in psychiatric patients receiving the drug therapeutically. Cell proliferations, as measured by mitotic index, was affected by both the concentration and the duration of drug exposure; the higher the dose and/or the longer the drug in culture, the lower the mitotic index. Imipramine concentrations corresponding to therapeutic plasma levels had no effect on mitotic index regardless of the length of exposure. 29 references. (Author abstract)

000700 Gautier, J.; Jus, A.; Villeneuve, A.; Jus, K.; Pires, P.; Villeneuve, R. Biochemistry Laboratory, Centre Hospitalier Robert-Giffard, Beauport, Quebec, Canada **Influence of the antiparkinsonian drugs on the plasma level of neuroleptics.** Biological Psychiatry. 12(3):389-399, 1977.

Interaction between various neuroleptics and antiparkinsonian drugs was analyzed by measuring neuroleptic plasma level before and after withdrawal of antiparkinsonian drugs. Subjects were 32 chronic schizophrenics treated with chlorpromazine, levomepromazine, thioridazine, or haliperidol. They were also receiving either benztropine, trihexyphenidyl, or procyclidine. Antiparkinsonians were withdrawn in the fifth week of the study and neuroleptics alone administered for the following 16 weeks. Results show a significant progressive increase in neuroleptic plasma level for 12 weeks after withdrawal of antiparkinsonians, after which a plateau was reached. Hypothetical mechanisms of action of antiparkinsonians on neuroleptic plasma level are discussed. 11 references. (Author abstract)

000701 Goldstein, Avram; Hansteen, Ralph W. Addiction Research Foundation, 701 Welch Rd., Palo Alto, CA 94304 **Evidence against involvement of endorphins in sexual arousal and orgasm in man.** Archives of General Psychiatry. 34(10):1179-1180, 1977.

The effects of naloxone hydrochloride, an endorphin inhibitor, on sexual arousal, erection, ejaculation, and orgasm were investigated. In a double-blind experiment, intravenous injections of naloxone in a dose sufficient to saturate the opiate receptors were administered to a male human subject. It was observed that the injections had no effect on any phase of sexual response. The results indicate that endorphins are not involved in sexual phenomena. 8 references.

000702 Greenblatt, D. J.; Shader, R. I.; Harmatz, J. S.; Franke, K.; Koch-Weser, J. Massachusetts General Hospital, Boston, MA 02114 **Rate of absorption and clinical response to single oral doses of chlordiazepoxide.** Clinical Pharmacology and Therapeutics. 21(1):105, 1977.

A study of the effect of Maalox on the absorption of oral chlordiazepoxide in 10 healthy male volunteers was reported at the 78th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, Dallas, 1977. Each subject received chlordiazepoxide or placebo and Maalox or water in a double-blind, 4 way crossover procedure. At multiple points in time during the 24 hr period after each dose, venous blood samples were drawn and the subjects completed visual analog self-rating mood scales. The mean absorption half-life for chlordiazepoxide with Maalox was 24 min, and the 30 min blood level of chlordiazepoxide was 0.34mcg/ml, while the mean absorption half-life with water was 11 min and mean 30 min blood level was 0.55mcg/ml. The completeness of absorption of chlordiazepoxide was not affected by Maalox. Self-ratings of "feeling spacey" at 1 hr and 2.5hr after chlordiazepoxide with water were significantly greater than pretreatment ratings but not after chlordiazepoxide with Maalox or placebo. Self-ratings at 1 hr were highly correlated with 30 min blood levels of chlordiazepoxide and its active metabolite, but not with 1 hr blood levels.

000703 Grundstrom, R.; Holmberg, G.; Ledermann, H.; Livstedt, B. Psykiatriska Kliniken, Danderyds Sjukhus, S-18203 Danderyd 3, Sweden **Sedative properties of doxepin in comparison with diazepam.** Psychopharmacology (Berlin). 54(2):165-169, 1977.

Sedation produced by doxepin (Quitaxon) in comparison with diazepam, the most commonly used benzodiazepine, was investigated using the percentage lowering of critical flicker fusion (CFF) and the self-estimated degree of drowsiness. Single doses of doxepin were given and repeated effect determinations were made over 6 h in 8 Ss. Clear dose/effect relations were demonstrated. The two drugs differed in speed and duration of action and in steepness of effect increase with dose. Although there were good correlations between CFF effect and subjective drowsiness, the two methods interrelated somewhat differently in the types of drug. CFF was a more stable and reliable method. When comparing drugs belonging to different classes, however, it is preferable to use both methods. 7 references. (Author abstract modified)

000704 Henderson, Gary L.; Wilson, B. Kent; Lau, Derick, H. M. Department of Pharmacology, School of Medicine, University of California, Davis, CA 95616 **Plasma 1-alpha-acetylmethadol (LAAM) after acute and chronic administration.** Clinical Pharmacology and Therapeutics. 21(1):16-25, 1977.

Plasma levels of 1-alpha-acetylmethadol (LAAM), noracetylmethadol (nor-LAAM), and dinoracetylmethadol (dinor-LAAM) were studied after both acute and chronic administration of LAAM to two groups of adult male heroin addicts, one group having receiving fixed daily doses of methadone and the other group not receiving methadone prior to the study. LAAM is a long-acting synthetic narcotic analgesic with a duration of action 3 times as long as methadone. The five subjects receiving 50mg/day methadone were removed from methadone and put on 60mg LAAM three times per week (Monday, Wednesday, Friday) for 90 days. During the 90 day period, the dose of LAAM was gradually increased to 85mg. Two of the five subjects did not complete the trial. The five subjects who had not been on methadone were started on 25mg LAAM three times per week, the LAAM being gradually increased to 85mg within the 90 day period. At the end of the 90 day period, all subjects were put on methadone. Plasma and urinary levels of LAAM and its metabolites, nor-LAAM and dinor-LAAM, were measured both after the first dose and after the last dose (at the end of 90 days) of LAAM. The plasma decay curves for LAAM after the first and last doses were similar, but nor-LAAM and dinor-LAAM accumulated, reaching plasma levels 5 and 13 times as high as after the first dose. The long duration of action may be explained by metabolic conversion of LAAM into active metabolites, and by binding of LAAM and its metabolites to tissue or plasma proteins. It is suggested methadone and LAAM may compete for binding sites. There may be some difficulty in converting subjects from methadone to LAAM. 14 references.

000705 Johannessen, Svein I.; Strandjord, Roald E.; Munthe-Kaas, Anders W. Statens Senter for Epilepsi, Box 900, N-1301 Sandvika, Norway **Lack of effect of clonazepam on serum levels of diphenylhydantoin, phenobarbital and carbamazepine.** Acta Neurologica Scandinavica (Kobenhavn). 55(6):506-512, 1977.

To determine whether a possible drug interaction effect can account for the antiepileptic effect of clonazepam, the influence of clonazepam on steady-state serum levels of diphenylhydantoin, phenobarbital and carbamazepine was studied in 22 patients with epilepsy receiving one or both of these drugs. Clonazepam was given in slowly increasing doses for 2 weeks until a maximum dose of 4 to 6mg per day was reached; thereafter, the dose was kept constant. The serum levels of diphenylhydantoin, phenobarbital and carbamazepine were determined once a week for at least 6 weeks. During clonazepam medication in ordinary doses, the serum levels of the drugs in question were unaltered. Thus, it is unlikely that the antiepileptic effect of clonazepam in these patients even partly may be due to increased serum levels of these other drugs mentioned. 18 references. (Author abstract modified)

000706 Judis, Joseph. College of Pharmacy, University of Toledo, Toledo, OH 43606 **Binding of codeine, morphine, and methadone to human serum proteins.** Journal of Pharmaceutical Sciences. 66(6):802-806, 1977.

The binding properties of codeine, morphine, and methadone were studied with selected human serum proteins. For estimation of the percent binding with equilibrium dialysis, concentrations of the ligand used were approximately therapeutic blood levels and another concentration 30 to 60 times higher. The percent binding to whole human serum ranged from about 20% for morphine to almost 60% for methadone. Of the human serum proteins investigated, the highest percent binding was found with albumin, except for methadone for which it was beta-globulin III. The affinity for other serum proteins varied with the ligand. In studies with al-

bumin using dynamic dialysis, the plots of nubar divided by free concentration versus nubar were similar for all three ligands studied and had positive slopes, unlike those reported for acidic compounds for which the slope is always negative. In studies of binding of one ligand in the presence of another, significant competition was demonstrated, suggesting that the same binding sites were involved. 29 references. (Author abstract modified)

000707 Kitson, T. M. Massey University, Palmerston North, New Zealand **Disulfiram-ethanol reaction.** Journal of Studies on Alcohol. 38:96-113, 1977.

The disulfiram-ethanol reaction (DER), the unpleasant symptoms experienced upon drinking alcohol after having ingested disulfiram, is reviewed. DER symptoms include blurred vision, nausea, vertigo, anxiety, and cardiovascular effects. The DER is thought to be caused by the inhibition of hepatic aldehyde dehydrogenase and the accumulation of toxic concentrations of acetaldehyde. Disulfiram is rapidly reduced to diethyldithiocarbamate (DDC) in the bloodstream; however there are several mechanisms by which DDC can be reoxidized to disulfiram, and thus ingestion of alcohol after administration of DDC can cause a DER. Many other compounds have a disulfiram like action. It appears that disulfiram therapy against alcoholism owes more to the psychological deterrent effect than to the pharmological manifestation of the DER itself. (Journal abstract modified)

000708 Kuda, Kenji. Tottori University School of Medicine, Yonago, Japan **The effect of diazepam, chlorpromazine and amobarbital on the contingent negative variation.** Folia Psychiatrica et Neurologica Japonica (Tokyo). 31(1):77-88, 1977.

The effects of diazepam, chlorpromazine, and amobarbital on the contingent negative variation (CNV) at the vertex and occipital areas were studied in groups of 10 subjects each. Amobarbital and placebo were given by the double-blind crossover method. Two kinds of experimental paradigms were used: click (warning stimulus, S1); flashes (imperative stimulus, S2); and click, electrical stimulation, motor response. The results obtained were as follows: 1) CNV amplitudes were decreased significantly by administration of diazepam only at vertex when S2 was flashes and at both vertex and occipital when S2 was electrical stimulation; 2) chlorpromazine induced effects were of either augmentation or decrement in CNV amplitudes depending on the subject and on the modality of S2; involvement of a dose dependent factor was suggested; 3) amobarbital and placebo did not give any significant changes to the CNV; and 4) significant correlations between CNV amplitudes at vertex and occipital were found before drug administration and even after taking drug exclusive of diazepam. Its decremental ratio from vertex to occipital was approximately 0.6to 0.8. The correlation coefficient became insignificant after taking diazepam only when S2 was flashed. It was concluded that the nervous structure relating to development of the CNV may not be identical when variable sense modalities of imperative stimulation are used. 30 references. (Author abstract modified)

000709 Layman, William A. Dept. of Psychiatry and Mental Health Science, New Jersey Medical School, CMDNJ, Newark, NJ **The systemic effects of lithium.** Journal of the Medical Society of New Jersey. 74(5):437-440, 1977.

A review of lithium therapy with particular emphasis on its effects on the body as a whole, rather than on its specific use in the treatment of psychiatric entities, is presented. A history of the use of lithium, including its present use in the treatment of manic patients, is related. Specific attention is given to indications, pretreatment evaluation, dosage, general side-effects, leukocytosis, cardiac complications, alterations in thyroid function, pregnancy, lithium intoxication, and overall treatment. Evidence relating to the biochemical action of lithium in manic depressive patients is reviewed. 6 references.

000710 Lenman, J. A. R.; Turnbull, M. J.; Reid, A.; Fleming, A. M. Department of Pharmacology and Medicine, University of Dundee, Scotland **Urinary monoamine metabolite excretion in disorders of movement.** Journal of Neurological Sciences (Amsterdam). 32(2):219-225, 1977.

Effects of amantadine and levodopa on urinary monoamine metabolite excretion was examined in patients with Parkinson's disease (n equals 38), choreiform movements (n equals 131), and essential tremor (n equals 101). Excretion of 1,4-methylhistamine and 5-hydroxyindole-3-acetic acid was significantly lower in patients with Parkinson's disease than in the controls. In patients with choreiform movements and esseneial tremor, urinary excretion of the amine metabolites studied did not differ significantly from controls. Administration of amantadine did not cause significant change in excretion of monoamine metabolites in any of the three groups. In addition to the expected increase in homovanillic acid excretion, administration of levodopa to Parkinson's patients was followed by significantly reduced excretion of 1,4-methylhistamine and 5-hydroxyindole-3-acetic acid. However, if amantadine and levodopa were given together excretion of 5-hydroxyindole-3-acetic acid was still reduced, but that of 1,4-methylhistamine was normal. Levodopa may thus modify the turnover of histamine, which appears to be reduced in Parkinson's disease and this effect may be modified by amantadine.

000711 Liakos, Aris; Boulougouris, John; Stefanis, Costas. Department of Psychiatry, University of Athens School of Medicine, Athens, Greece **Psychophysiological effects of acute cannabis inhalation.** In: Stefanis, C., Hashish: studies of long-term use. New York, Raven Press, 1977. 181 p. (p. 103-110).

A study of the psychophysiological effects produced in Greek subjects with a long history of hashish use by inhalation of various cannabis substances is reported. Electrodermal activity, pulse rate, finger pulse volume, respiration, skin temperature, and pupil size were measured after each of the following drugs: 1) marihuana containing 78mg of delta9-tetrahydrocannabinol (delta9-THC); 2) hashish containing 90mg of delta9-THC; 3) hashish containing 180mg of delta9-THC; 4) 100mg of pure delta9-THC mixed with tobacco; and 5) placebo. Each substance elicited tachycardia, a decreased finger pluse volume, decreased skin conductance level, and pupillary dilation. No alterations in the respiratory rate or skin temperature were produced.

000712 Lloyd, K. G.; Davidson, L.; Price, K.; McClung, H. J.; Gall, D. G. Department of Psychopharmacology, Clarke Institute of Psychiatry, 250 College Street, Toronto, Ontario M5T 1R8, Canada **Catecholamine and octopamine concentrations in brains of patients with Reye syndrome.** Neurology. 27(10):985-988, 1977.

Dopamine, norepinephrine, and octopamine levels were estimated in regions of brains obtained postmortem from children who died with Reye syndrome and from age matched controls. Hypothalamic norepinephrine levels were greatly decreased and octopamine levels were increased. Levodopa had little effect on the physiologic condition of the patients. However, CNS dopamine and homovanillic concentrations were not

elevated by levodopa, indicating that in the present cases levodopa was not metabolized to its catecholamine products. The findings indicate that the encephalopathy of Reye syndrome (as in other types of hepatic coma) may be linked to the presence of false transmitters in the brain and that levodopa is a rational therapy if administered before irreversible CNS changes occur. 39 references.

000713 Mahon, W. A.; Inaba, T.; Stone, R. M. College Wing, Toronto General Hospital, Toronto, Ontario M5G 1L7, Canada **Metabolism of flurazepam by the small intestine.** Clinical Pharmacology and Therapeutics. 22(2):228-233, 1977.

The metabolism of flurazepam was investigated following administration of radiolabeled drug through a tube into the stomach of one patient and into the duodenum of two patients after catheterization of the portal vein and the hepatic vein. Flurazepam and its metabolites appeared rapidly in the portal blood, at times when the hepatic and peripheral blood contained little or no flurazepam or its metabolites. Considerable hepatic uptake of flurazepam and its metabolites occurred, as evidenced by the lower concentrations of these compounds in the hepatic vein. It is concluded that metabolism of flurazepam occurs in the small bowel mucosa of man as well as in the liver. 9 references. (Author abstract modified)

000714 Meltzer, Herbert L.; Kassir, Suham; Dunner, David L.; Fieve, Ronald R. Department of Internal Medicine, New York State Psychiatric Institute, 722 West 168th Street, New York, NY 10032 **Repression of a lithium pump as a consequence of lithium ingestion by manic-depressive subjects.** Psychopharmacology (Berlin). 54(2):113-118, 1977.

Evidence for the repression of a lithium pump in human erythrocyte membranes, which is responsible for extrusion of lithium against a concentration gradient, was obtained with manic-depressive Ss on a lithium carbonate regimen. The pump activity of 83 patients prior to lithium therapy was not different from controls. Onset of repression required several days to several weeks and occurred at specific individual threshold levels of lithium carbonate dosage. Reactivation of the pump occurred sometime after dosage was discontinued. It is postulated that repression of the lithium pump resulted from systemically available factors which altered membrane structure, and that if such changes also occur in the CNS, they may provide insight into one means by which lithium produces its psychotropic effects. 33 references. (Author abstract modified)

000715 Montgomery, S. A.; Braithwaite, R. A.; Crammer, J. L. Dept. of Psychiatry & Poisons Unit, Guy's Hospital Medical School, London SE1, England **Routine nortriptyline levels in treatment of depression.** British Medical Journal (London). No. 6080:166-167, 1977.

The effect of nortriptyline on 36 depressed inpatients at a hospital in England was investigated, focusing on whether doses that lead to high plasma levels are ineffective or even prevent recovery. Several studies have indicated this possibility with nortriptyline, and a therapeutic range of 50 to 150 micrograms/l has been recommended. Results in this study confirmed that high plasma nortriptyline concentrations can be produced by moderate doses and that they can inhibit recovery in depressed patients. It is recommended that routine measurement of plasma nortriptyline levels be carried out in patients taking this drug. 5 references. (Journal abstract modified)

000716 Nagy, Adam; Johansson, Rustan. Lillhagen Hospital, Department II, S-42203 Hisings Backa, Sweden **The demethylation of imipramine and clomipramine as apparent from their plasma kinetics.** Psychopharmacology (Berlin). 54(2):125-131, 1977.

The demethylation of the antidepressant agents, imipramine and clomipramine, as apparent from their plasma kinetics, was studied in five healthy volunteers who received single oral and intramuscular doses. Desmethylclomipramine was found in the plasma of four Ss after oral intake but only in one S after intramuscular injection of clomipramine bydrochloride. Peak levels of clomipramine were higher after intramuscular administration, and clomipramine half-lives after oral administration ranged from 11.6to 35.8h and 20.1to 39.6h after oral and intramuscular administrations respectively. A group of 20 Ss received either imipramine or clomipramine orally and intramuscularly over 3 weeks and the plasma levels and demethylated metabolites, desipramine and desmethylclomipramine, were determined during treatment. The ratio between plasma level of the parent drug and its demethylated metabolite was twice as high during intramuscular as compared to oral treatment. 19 references. (Author abstract modified)

000717 Naylor, G. J.; Smith, A.; Boardman, L. J.; Dick, D. A. T.; Dick, E. G.; Dick, P. Department of Psychiatry, Ninewells Hospital and Medical School, Dundee, Scotland **Lithium and erythrocyte membrane cation carrier studies in normal and manic depressive subjects.** Psychological Medicine (London). 7(2):229-233, 1977.

Changes in the erythrocyte membrane cation carrier following lithium ingestion in normal human subjects were studied. It was found that ouabain sensitive potassium influx fell significantly during the lithium treated phase. Lithium was fed to rats and no change in erythrocyte Na-K ATPase was shown. These findings contrast with studies of lithium in manic-depressive psychosis. The fluctuations in the erythrocyte membrane cation carrier were studied in 5 normal subjects over 12 weeks and the correlations between the parameters calculated. The erythrocyte sodium concentration correlated positively with the ouabain sensitive potassium influx. This, too, contrasts with findings in manic depressive psychosis. 19 references. (Journal abstract modified)

000718 Neu, Carlos; DiMascio, Alberto. Tufts University School of Medicine, Boston, MA **Saliva lithium levels: clinical applications.** Psychopharmacology Bulletin. 13(1):55-57, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, a study of the correlations between the concentrations of lithium in mixed saliva, parotid fluid, and serum in 20 patients receiving lithium carbonate therapy is presented. A near constant ratio was found between serum and saliva or parotid fluid lithium levels, with an average serum/saliva ratio of 2.35 and an average serum/parotid fluid ratio of 2.20. The correlation between the individual parotid fluid and serum levels was .93 and that for the mixed saliva and serum levels was .90. The findings suggest that saliva or parotid fluid lithium levels can be used as reliable indicators in monitoring lithium therapy which are simpler to collect and transport than serum and which do not require repeated venipuncture. However, it is warned that patients receiving lithium frequently receive a second drug with atropinelike effects which may, by affecting salivary secretion, alter the validity of salivary levels of lithium. 4 references.

000719 Nielsen, J. Lanng; Amdisen, A.; Darling, S.; Pedersen, E. B. Psychopharmacology Research Unit, Psychiatric Hospital, Aarhus, DK-8240 Risskov, Denmark **Plasma prolactin during lithium treatment.** Neuropsychobiology (Basel). 3(1):30-34, 1977.

Plasma prolactin was determined in a longitudinal study, where nine manic-depressive patients were examined before lithium treatment and at various times during the treatment with the aim of unravelling a possible association between initial changes in water and sodium balance during lithium treatment and changes in plasma prolactin level. No significant changes were found, nor could any correlation between serum lithium and plasma prolactin be established. Some reports have indicated association between breast cancer and prolonged elevated plasma prolactin, such as is seen during treatment with phenothiazines and reserpine. In a transversal study, determination of plasma prolactin during long-term lithium treatment in 26 patients did not reveal any elevation compared with 16 controls. Lithium is accordingly not seen to be among the drugs which produce prolonged elevation of plasma prolactin. 12 references. (Author abstract)

000720 Odar-Cederlof, Ingegerd; Vessman, Jorgen; Alvan, Gunnar; Sjoqvist, Folke. Department of Internal Medicine, Renal Unit at the Karolinska Hospital, S-10401 Stockholm, Sweden **Oxazepam disposition in uremic patients.** Acta Pharmacologica et Toxicologica (Kobenhavn). 40(Supplement 1):52-62, 1977.

The pharmacokinetics of oxazepam was investigated in 13 uremic patients. The apparent terminal half-life of oxazepam in plasma was 24 to 91 hours compared to 5.9to 25 hours reported elsewhere for healthy volunteers. The plasma concentrations showed secondary peaks about 24 hours after the dose and this probably gave rise to the increase in half-life. Plasma clearance of oxazepam appeared to be normal. The conjugated metabolites accumulated to concentrations 5 to 50 times those of the parent compound and could still be detected 5 days after a single oral dose (0.2mg/kg). Renal clearance of conjugated oxazepam was significantly correlated to creatinine clearance. The uninary recovery over 5 days was 18 to 57%. The fecal recovery over 3 days was 0.1to 19%. In some patients up to 49% of oxazepam in feces was in the conjugated form. It is concluded that enterohepatic recycling of oxazapem might occur in uremic patients but is not of great quantitative importance. During multiple dosing the accumulation of conjugates was even more pronounced, with plasma concentrations amounting to 14 to 61 times those of oxazepam. Steady state plasma concentrations of oxazepam were similar to those obtained in normal subjects. 20 references. (Author abstract)

000721 Olatawura, M. O. Dept. of Psychiatry, University of Ibadan, Ibadan, Nigeria **Effectiveness of psychotropic drugs in patients in a state of malnutrition or exposed to extreme climatic conditions.** Psychopharmacology Bulletin. 13(1):8-13, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, the influence of malnutrition and chronic exposure to extreme climatic conditions on the effectiveness of psychotropic drugs is reviewed, with emphasis on the use of drugs to treat anxiety states, depressive illness, and psychoses in developing countries in Africa, Asia, Latin America, and the Caribbean area. It is suggested that populations perennially exposed to malnutrition may exhibit differences in drug metabolism compared to populations in developed areas. In particular, metabolic regulation by coenzymatic vitamins may be altered in the vitamin poor diet. Fertility regulating drugs may further compromise vitamin turnover in malnourished populations. While clinical trials of psychotrophic drugs have been limited in developing countries, the available data on clinical trials from these areas are congruent in efficacy and side-effects to trials in developed areas. 58 references.

000722 Panayiotopoulos, C. P.; Stefanis, Costas. Department of Psychiatry, University of Athens School of Medicine, Athens, Greece **Visual evoked reponses in chronic hashish users.** In: Stefanis, C., Hashish: studies of long-term use. New York, Raven Press, 1977. 181 p. (p. 91-94).

A study of the alterations in the visual evoked responses (VERs) produced in Greek long-term hashish users by the smoking of high doses of cannabis substances is reported. The VERs were recorded 25 min before and 45 min after smoking each of the following drugs: 1) marihuana containing 78mg of delta9-tetrahydrocannabinol (delta9-THC); 2) hashish containing 90mg of delta9-THC; 3(hashish containing 180mg of delta9-THC; 4) 100mg pure delta9-THC mixed with tobacco; and 5) placebo. The changes in VER produced by these high doses of delta9-THC were small and limited to an increase in the amplitude of a late VER component. These results are compatible with the suggestion (based on animal studies) that the principal sites of action of delta9-THC are probably cerebral association areas and their related subcortical structures. The finding that delta9-THC increases the amplitude of negative (N-3) late VER components suggests that the substance has a stimulant effect.

000723 Panayiotopoulos, C. P.; Volavka, Jan; Fink, Max; Stefanis, Costas. Department of Psychiatry, University of Athens School of Medicine, Athens, Greece **II. Clinical electroencephalography and echoencephalography in long-term hashish users.** In: Stefanis, C., Hashish: studies of long-term use. New York, Raven Press, 1977. 181 p. (p. 59-62).

A study in which the electroencephalogram (EEG) and echoencephalogram (Echo-EGG) of long-term hashish users were compared with those of control subjects which was conducted in Greece as part of a series of studies on the behavioral, medical, neurological, psychological, and social consequences of long-term hashish use is reported. No abnormality or particular EEG change in the resting EEG records of chronic hashish users were found. The Echo-EEGs were also within the normal range. The data failed to provide evidence that long-term hashish use produces an organic mental syndrome.

000724 Pandey, G. N.; Davis, J. M.; Ostrow, D. G.; Javaid, J. I.; Tosteson, D. C. Illinois State Psychiatric Institute, Chicago, IL 60612 **Lithium transport in red blood cells of manic-depressive patients.** Clinical Pharmacology and Therapeutics. 21(1):113-114, 1977.

A study of lithium transport in human red blood cells was discussed at the 78th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, Dallas, 1977. There are three pathways of lithium transport, one which is sensitive to ouabain, one is sensitive to phloretin, and one is insensitive to both. Steady state lithium distribution in vivo between red blood cells and plasma seems to depend mainly on the quantitative balance between phloretin and ouabain insensitive lithium influx and an active efflux occurring through a lithium/sodium counterflow system which is sensitive to phloretin and involves a lithium/sodium exchange system. Patients who achieve an abnormally high in vitro lithium ratio and respond to lithium therapy also show a significantly

reduced net lithium/sodium counterflow, decreased phloretin sensitive lithium efflux, and decreased capability for lithium/sodium exchange as compared with normal controls. Intrinsic circulatory factors present in plasma were not responsible for decreased efflux characteristics. Results demonstrate a specific lesion in the erythrocyte membrane of patients showing a high in vivo lithium ratio. 2 references.

000725 Pedersen, E. B.; Amdisen, A.; Darling, S. Department of Medicine C, Aarhus Kommunehospital, DK-8000 Aarhus C, Denmark **Plasma aldosterone and magnesium in serum and urine during lithium treatment.** International Pharmacopsychiatry (Basel). 12(2):80-85, 1977.

The metabolic action of lithium in manic-depressive disorders was studied, emphasizing magnesium levels in serum and urine. Correlations between magnesium and plasma aldosterone were also determined. Eight patients were tested before, and at intervals during 3 months of lithium treatment (longitudinal study), and 27 patients were tested after lithium intake lasting 3 months to 20 years (transverse study). In the longitudinal study, urinary magnesium excretion and urine flow increased slightly after 1 to 3 months of therapy; serum magnesium and plasma aldosterone were unchanged. In the transverse study, urinary magnesium excretion, serum magnesium and plasma aldosterone were within normal limits, and did not differ significantly from levels in the longitudinal study. No correlation was found between serum magnesium or urinary magnesium excretion and plasma aldosterone in either study. Results indicate that changes in urinary magnesium excretion during lithium therapy are not mediated via changes in plasma aldosterone, but may be secondary to diminished renal water reabsorption induced by lithium. 16 references. (Journal abstract modified)

000726 Phillipson, O. T.; McKeown, J. M.; Baker, J.; Healey, A. F. Department of Anatomy, Karolinska Institute, S-10401 Stockholm 60, Sweden **Correlation between plasma chlorpromazine and its metabolites and clinical ratings in patients with acute relapse of schizophrenic and paranoid psychosis.** British Journal of Psychiatry (London). 131:172-184, 1977.

The correlation between plasma chlorpromazine (CPZ) and its metabolites and clinical ratings in patients with acute relapse of schizophrenic and paranoid psychosis was investigated. Plasma levels of CPZ, 7-hydroxychlorpromazine(7OHCPZ), monodesmethylchlorpromazine, and chlorpromazine sulfoxide (SOCPZ) were monitored in nine patients during CPZ treatment while clinical response was measured by a nurse's rating scale and the Present State Examination (PSE). Correlations were made between increased plasma levels of CPZ or its metabolites and improvement in PSE scores. The most significant correlations occurred with symptoms with high diagnostic significance for schizophrenia (Group 1) and symptoms rating perceptual disorders (P) plasma levels of 7OHCPZ first thing in the morning. The ratio of 7OHCPZ to CPZ increased significantly as clinical ratings improved and the correlation was most significant against Group 1 and P scores. The ratio of 7OHCPZ to SOCPZ was significant only for Group 1 and P scores. The results seem to indicate a preferential shift in CPZ metabolism toward the formation of the active metabolite 7OHCPZ during the period of clinical improvement. 22 references. (Author abstract modified)

000727 Pilbrant, Ake; Glenne, Per-Olov; Sundwall, Anders; Vessman, Jorgen; Wretlind, Marita. Research Department, AB KABI, S-104 25 Stockholm, Sweden **Comparative bioavailability of oral dosage forms of oxazepam -- correlation with in vitro dissolution rate.** Acta Pharmacologica et Toxicologica (Kobenhavn). 40(Supplement 1):7-15, 1977.

Four oxazepam tablet preparations and a suspension of micronized oxazepam in water were given to healthy, fasting volunteers in a comparative bioavailability study using a partial crossover design. Urinary recovery was used as a measure of extent of absorption. Peak serum concentration was used as a measure of rate of absorption. The three dosage forms having the highest dissolution rate in vitro were absorbed to the same extent, while slower dissolving tablets were not as fully absorbed. Peak serum concentration correlated linearly with in vitro dissolution rate. Single oral doses of oxazepam tablets containing 10, 15, and 25mg showed equal rates and extents of absorption and produced serum concentrations linearly correlated with dose. 10 references. (Author abstract)

000728 Post, Claes; Lindgren, Sune; Bertler, Ake; Malmgren, Harry. Dept. of Clinical Pharmacology, University Hospital, University of Linkoping and AB Leo, Helsingborg, Sweden **Pharmacokinetics of N-desmethyldiazepam in healthy volunteers after single daily doses of dipotassium chlorazepate.** Psychopharmacology (Berlin). 53(2):105-109, 1977.

A study of the pharmacokinetic properties of N-desmethyldiazepam in young, healthy humans of both sexes after repeated single daily doses of dipotassium chlorazepate is presented. Plasma concentrations of N-desmethyldiazepam were monitored with a gas chromatographic method during the medication period and for 5 days after withdrawal of the drug. It is concluded that there is no tendency toward a biexponential elimination and that a significant difference in the apparent volume of distribution is found when males and females are compared. 21 references. (Journal abstract modified)

000729 Post, Robert M.; Goodwin, Frederick K. Adult Psychiatry Branch, NIMH, Bethesda, MD 20857 **Clinical evidence for neurochemical adaptation to psychotrophic drugs.** Psychopharmacology Bulletin. 13(1):47-49, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, a study of the effects of acute and chronic administration of stable doses of chlorpromazine, thioridazine, or pimozide to manic depressive and schizophrenic patients on dopamine (DA) turnover (as reflected by probenecid induced accumulations of homovanillic acid (HVA) in cerebrospinal (CSF) fluid was reported. The study was performed to investigate time dependency and compensatory adaptation to phenothiazines. Acute administration of chlorpromazine or thioridazine produced increases in HVA compared to baseline; acute administration of pimozide produced increases in HVA in 6 of 10 patients but these increases were not statistically significant. After at least 3 weeks of treatment, clinically effective doses of each drug did not produce increases in HVA accumulation. Differences in HVA accumulations between acute and chronic administration did not appear to be related to dose, level of probenecid in CSF, global ratings of psychopathology, presence or absence of parkinsonian side effects, or diagnosed disease. It is suggested that chronic administration of neuroleptics may result in tolerance to the effects of the drugs on DA turnover, and that some initial clinical effects of phenothiazines may be related to the almost immediate onset of DA receptor blockade, while the effects on thought disorder or other primary symptoms of schizophrenia, which appear after several weeks of therapy, may be related to the later, less prominent effects of the drugs on DA turnover. 5 references.

000730 Rachelefsky, Gary S.; Opelz, Gerhard. Department of Surgery and Pediatrics, UCLA School of Medicine, 1000 Veteran Avenue, Los Angeles, CA 90024 **Normal lymphocyte function in the presence of delta9-tetrahydrocannabinol.** Clinical Pharmacology and Therapeutics. 21(1):44-46, 1977.

The functioning of normal human lymphocytes in vitro in the presence of delta9-tetrahydrocannabinol (delta9-THC) was studied. The delta9-THC was dissolved in 96% ethanol and added to normal human AB plasma at dilutions ranging from 1:20 to 1:1000. Lymphocytes were obtained from healthy volunteers and added to the delta9-THC/ethanol mixture. The final delta9-THC concentrations ranged from 0.06 to 1.06mM. Addition of delta9-THC to normal human lymphocytes had no specific effect on spontaneous DNA synthesis. Neither did delta9-THC affect the response of the lymphocytes to phytohemagglutinin or to allogenic lymphocytes. 9 references.

000731 Ratey, John J.; Mallinger, Alan G. Dept. of Psychiatry, University of Pittsburgh School of Medicine, Pittsburgh, PA 15261 **The relationship between extra- and intracellular lithium concentration in human red blood cells: an in vitro study.** British Journal of Psychiatry (London). 131:59-62, 1977.

Relationship between extracellular and intracellular lithium concentration in human red blood cells (RBCs) was investigated in RBCs inubated in vitro at four different extracellular lithium concentrations. As extracellular lithium concentration increased, the interindividual variability of RBC lithium accumulation increased. The ratio of RBC lithium concentration to extracellular lithium concentration (lithium ratio) increased in relation to increasing extracellular lithium concentration. It is suggested that lack of agreement among investigators on the significance of the lithium ratio may be due, in part, to the study of patients with differing levels of extracellular lithium. 11 references. (Author abstract modified)

000732 Rivera-Calimlim, L.; Nasrallah, H.; Gift, T.; Kerzner, H.; Griesbach, P. H.; Wyatt, R. J. Department of Pharmacology, University of Rochester, Rochester, NY 14620 **Plasma levels of chlorpromazine: effect of age, chronicity of disease, and duration of treatment.** Clinical Pharmacology and Therapeutics. 21(1):115-116, 1977.

The relationship between chlorpromazine dosage and the plasma level achieved was studied in chronic adult psychiatric patients, acute adult psychiatric patients, psychotic children 8 to 16 years old, and healthy adult volunteers. The study was reported at the 78th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, Dallas, 1977. A majority of 21 acute psychiatric patients on daily doses of 400 to 1000mg chlorpromazine for 3 to 4 weeks achieved plasma levels of 151 to 614ng/ml, whereas the majority of 38 chronic psychiatric patients on similar doses achieved plasma levels of 18 to 51ng/ml. Although chronic patients were given daily doses over 1000mg more than the acute patients, the chronic patients had plasma levels of only 59 to 129ng/ml, while the acute patients had plasma levels of 170 to 1225ng/ml. Six psychotic children receiving daily doses of 250 to 800mg for 3 to 10 wk achieved mean plasma levels of 20 to 76ng/ml. Six healthy volunteers achieved a mean plasma peak level of 48ng/ml 2 to 4 hr after an oral dose of 100mg chlorpromazine. Thus, young age, chronicity of disease, and prolonged drug treatment may be associated with impaired gut absorption or accelerated metabolism of chlorpromazine.

000733 Robinson, D. S.; Nies, Alexander; Ravaris, C. L. University of Vermont College of Medicine, Burlington, VT **Acute versus chronic effects of monoamine oxidase inhibitors in depressed patients: time course of MAO inhibitors.** Psychopharmacology Bulletin. 13(1):50-51, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, a series of studies attempting to assess the time courses of platelet monoamine oxidase (MAO) inhibition and clinical improvement produced in depressed patients by phenelzine is presented. It was found that: 1) phenelzine is an effective drug in outpatients with a spectrum of depressive symptoms that can be regarded as nonendogenous, neurotic, or atypical; 2) the degree of platelet MAO inhibition at 4 weeks of therapy seems to be predictive of clinical response; 3) maximum platelet MAO inhibition is achieved earlier with a 30mg/day dose than with a 60mg/day dose, suggesting that the metabolism of phenelzine may not follow first order kinetics; however, the 60mg/day dose is more effective therapeutically; and 4) at the 60mg/day dose, a therapeutic drug effect is detected as early as 14 day and maximum benefit is attained between 2 and 4 weeks after start of therapy. Preliminary results of a trial of phenelzine vs amitriptyline indicate that both drugs produce 60% of the ultimate mean improvement by the second week. 11 references.

000734 Robinson, D. S.; Nies, A. Department of Medicine, University of Vermont College of Medicine, Burlington, VT 05401 **Increased steady-state plasma levels and prolonged half-lives of tricyclic antidepressants in the elderly.** Clinical Pharmacology and Therapeutics. 21(1):116, 1977.

A study of the effect of age on the plasma levels of tricyclic drugs was presented at the 78th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, Dallas, 1977. Steady state plasma levels and half-lives were determined in 23 patients treated with imipramine, most patients receiving 50mg t.i.d. for a minimum of 21 days. Plasma imipramine and desipramine levels correlated significantly with age, as did plasma half-lives. Patients over 65 years old had mean imipramine and desipramine levels which were over twice those of younger patients; the half-lives of imipramine and desipramine were also longer in the patients over 65. In 35 outpatients treated for 6 wk with 50mg amitriptyline t.i.d.,steady state plasma levels of amitriptyline correlated significantly with age, but plasma nortriptyline levels did not. These pharmacokinetic differences have important implications for tricyclic dosage in older patients, inasmuch as serious adverse effects, including cardiotoxicity and confusional states, occur with greater frequency in elderly patients.

000735 Rubin, Alan; Lemberger, Louis; Warrick, Patricia; Crabtree, Ross E.; Sullivan, High; Rowe, Howard; Obermeyer, Boyd D. Lilly Laboratory for Clinical Research, Wishard Memorial Hospital, 1001 West 10th St., Indianapolis, IN 46202 **Physiologic disposition of nabilone, a cannabinol derivative, in man.** Clinical Pharmacology and Therapeutics. 22(1):85-91, 1977.

The physiological disposition of nabilone, a cannabinol derivative being evaluated in man as a potentially useful psychoactive drug, is presented. Nabilone was readily absorbed from the human gastrointestinal tract when administered orally as a coprecipitate with polyvinyl-pyrrolidone. The absorbed drug disappeared from plasma rather rapidly (half-life, approximately 2 hr), evidently due to extensive tissue distribution and rapid metabolism. The metabolites of nabilone persist in plasma for extended periods (half-life of total radioactivity exceeds 20 hr). Circulating metabolites include isomeric carbinols formed by reduction of the ketone in the 9 position of nabilone. Nabilone is elminiated in feces (about

65% of dose) and urine (20%). The excretory products in urine have not been identified, but metabolites that are liable to hydrolysis by beta-glucuronidase or sulfatase do not appear to be formed in significant amounts. A metabolite of nabilone in feces has been identified as a diol formed by reduction of the 9-keto group plus oxidation at the penultimate carbon of the dimethylheptyl side-chain. The long duration of action of nabilone in the face of rapid and extensive metabolic elimination suggests that the pharmacologic effects, at least in part, may be exerted by one or more active metabolites. 8 references. (Journal abstract)

000736 Rybakowski, Janusz. Depression Research Unit, Veterans Administration Hospital, University and Woodland Avenues, Philadelphia, PA **Pharmacogenetic aspect of red blood cell lithium index in manic-depressive psychosis.** Biological Psychiatry. 12(3):425-429, 1977.

Lithium penetration into red blood cells (RBC) was investigated in 60 manic-depressive patients. In the course of the study all patients were normothymic, received a constant dose of lithium carbonate, and did not take other psychotropic drugs. Results show RBC lithium index was significantly higher in female than in male patients. Patients who had first-degree relatives with affective illness had a higher RBC lithium index than did other patients. This effect was significant in women. That X-linked inheritance may be partially involved in determining the high RBC lithium index is suggested. 20 references.

000737 Sakalis, G.; Traficante, L. J.; Gershon, S. Department of Psychiatry, New York University Medical Center, 550 First Avenue, New York, NY 10016 **Thioridazine metabolism and clinical response: a pilot study.** Current Therapeutic Research (Tenafly). 21(5):720-724, 1977.

Schizophrenics unresponsive to chlorpromazine were treated with thioridazine to bypass inactive chlorpromazine sulfoxide. Three of six patients improved on this treatment; they were found to have high thioridazine-2-sulfoxide plasma levels. The assays were carried out by Muusze's method of thin layer chromatography followed by fluorescence measurement. This pilot work suggests that high mesoridazine plasma levels might be associated with good clinical response, and that mesoridazine might be a good drug for patients not responding to neuroleptic treatment. Further work is needed in this area. In addition, investigation of the differential protein binding of thioridazine and its metabolites as well as cerebrospinal fluid assays are indicated. 7 references. (Author abstract modified)

000738 Sellers, E. M.; MacLeod, S. M.; Greenblatt, D. J.; Giles, H. G. Division of Clinical Pharmacology, Clinical Institute, Addiction Research Foundation, Toronto, Ontario, Canada **Influence of disulfiram and disease on benzodiazepine disposition.** Clinical Pharmacology and Therapeutics. 21(1):117, 1977.

A study of the disposition of chlordiazepoxide in 14 normal subjects, 6 of whom received disulfiram for 14 days, as well as in 10 former alcoholics maintained on disulfiram and 4 patients with cirrhosis of the liver, was presented at the 78th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, Dallas, 1977. In the normal subjects, disulfiram increased the half-life from 8.5to 19 min, decreased Vd from 0.45 to 0.36, and decreased clearance from 49 to 17ml/min. Clearance, Vd, and half-life in the former alcoholics receiving disulfiram and the cirrhotic patients were the same as in the normal subjects after 14 days of disulfiram. Disulfiram decreased desmethylchlordiazepoxide concentration, suggesting that disulfiram inhibits chlordiazepoxide biotransformation.

000739 Shaw, David M.; Riley, Graham J.; Michalakeas, Alexandros C.; Tidmarsh, Simon, F.; Blazek, Richard; Johnson, Anthony L. Biochemical Psychiatry Laboratory, Whitchurch Hospital, Cardiff CF4 7XB, Wales **New direction to the amine hypothesis.** Lancet (London). 1(8024):1259-1260, 1977.

Amine hyperactivity is postulated in unipolar affective illness, research and clinical findings consistent with this hypothesis are presented, and the results of a pilot study of maprotiline plus pizotifen in the treatment of depression are reported in a letter to the editor. It is suggested that unipolar affective illness might be due to a failure of protein synthesis in 5-hydroxytryptamine (5-HT) neurones resulting in a reduction in 5-HT release, the development of receptor supersensitivity, and overactivity in serotoninergic pathways. To determine if a drug which blocks 5-HT receptors would potentiate the antidepressant response to a compound presumably acting via blockade of reuptake of noradrenaline responses of nine depressed patients to maprotiline plus pizotifen were compared with historical controls receiving electroconvulsive therapy (ECT) or tricyclics. No significant differences were found among treatment groups. the good recovery rates found during blockade of 5-HT receptors is consistent with the 5-HT overactivity hypothesis. 21 references.

000740 Snead, O. Carter. Department of Pediatrics, USAF Medical Center, Keesler Air Force Base, MS **Gamma hydroxybutyrate.** Life Sciences (Oxford). 20(12):1935-1943, 1977.

The properties of gamma-hydroxybutyrate (GHB), a four carbon compound with neuropharmacologic and neurophysiologic properties unique to naturally occurring small molecules, are described. Animal studies indicate that GHB pharmacokinetics is species dependent. The source is unclear although it appears related to gamma-aminobutyric acid (GABA) metabolism. Effects include increases in brain acetylcholine and dopamine, possible inhibition of GABA ketoglutarate transaminase and involvement in morphine analgesia, increases in hydrocortisone and growth hormone, and depression of glucose utilization, but not of oxygen consumption, in the brain. GHB depresses both monosynaptic and polysynaptic reflex arcs, depresses surface negative component in cortical primary evoked potential, depresses firing of dopaminergic neurons, depresses short-term memory and critical flicker frequency in man, and causes EEG behavioral dissociation. Possible roles for GHB in humans are discussed. These range from insignificant metabolic action to modulation of dopaminergic neuronal activity, sleep regulation, and significance in certain pathologic states. These states include metabolic encephalopathies such as hepatic coma, pathologic sleep conditions (Kleine-Levin), opiate addiction, and seizure disorders. 111 references.

000741 Snyder, Solomon H.; Enna, S. J.; Young, Anne B. Department of Psychiatry and Behavioral Sciences, Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Brain mechanisms associated with therapeutic actions of benzodiazepines: focus on neurotransmitters.** American Journal of Psychiatry. 134(6):662-665, 1977.

Animal research and clinical data implicating the neurotransmitters gamma-aminobutyric acid (GABA), glycine, norepinephrine, and serotonin (5-HT) in the mediation of therapeutic actions of benzodiazepines are reviewed. The sedative, muscle relaxant, antianxiety, and anticonvulsant ef-

fects of benzodiazepines may involve several distinct mechanisms because dissociation among these actions can be demonstrated with various drugs. Neurotransmitters displaying prominent interactions with benzodiazepines include GABA, glycine, norepinephrine, and serotonin. 12 references. (Author abstract modified)

000742 Stanski, Donald R.; Greenblatt, David J.; Selwyn, Adrian. Dept. of Anesthesia, Massachusetts General Hospital, Boston, MA 02114 **Plasma and cerebrospinal fluid concentrations of chlordiazepoxide and its metabolites in surgical patients.** Psychopharmacology Bulletin. 13(1):53-54, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, a study in which whole blood, plasma, and cerebrospinal fluid (CSF) from a lumbar site of 25 healthy patients who received 50 to 100mg of chlordiazepoxide HCl (CDX) orally prior to elective surgery was examined to investigate entry kinetics of the drug and its metabolites into the CSF is presented. Plasma concentrations of CDX and desmethylchlordiazepoxide (DMCDX) were consistently higher than those measured in whole blood. Demoxepam (DMX) levels were higher in blood than in plasma, suggesting uptake or binding by red cells. Equilibration of CDX between plasma and CSF appeared to be complete by 60 min after the last CDX dose. Traces of DMCDX, but not DMX, were detected in the CSF of 21 patients. Studies of CDX and its metabolites in the CSF were also performed after intravenous administration of 100mg CDX to three patients who required indwelling lumbar CSF catheters. In all three subjects, the disappearance of CDX from plasma was exponential and was mirrored by the appearance of DMCDX. CDX was detected in CSF within 30 min and reached peak CSF levels 2 to 4 hr after administration. DMCDX appeared in CSF in two patients at low concentrations. The CSF/plasma ratio for CDX was similar after both oral and intravenous administration. It is suggested that CDX enters CSF fairly readily but that this investigation has limitations because CSF was sampled from a lumbar site. 7 references.

000743 Van Praag, H. M. Psychiatric University Clinic, State University of Groningen, Groningen, The Netherlands **New evidence of serotonin-deficient depressions.** Neuropsychobiology (Basel). 3(1):56-63, 1977.

Evidence for depression caused by serotonin deficiency was investigated in 30 patients suffering from vital depression. A negative correlation was found between the pretherapeutic postprobenecid cerebospinal fluid (CSF) 5-hydroxyindoleacetic acid (5-HIAA) response and the therapeutic response to clomipramine, a tricyclic antidepressant with a strong potentiating effect on central 5-hydroxytryptamine (5-HT). It was concluded that if the central 5-HT turnover is diminished in depressions, then correction of this biochemical disturbance leads to alleviation of depressive symptoms. This finding is considered to support the concept of 5-HT deficient depression. Five of the eight clomipramine resistant patients showed a favorable response to nortriptyline, a NA potentiating antidepressant. The pretherapeutic CSF 3-methoxy-4-hydroxyphenylglycol concentration in these patients was not related to the therapeutic efficacy of nortriptyline. The assumption that these patients were NA deficient was not confirmed. 21 references. (Author abstract modified)

000744 Volvaka, Jan; Fink, Max; Panayiotopoulos, C. P. Missouri Institute of Psychiatry, St. Louis, MO 63139 **Acute EEG effects of cannabis preparations in long-term hashish users.** In: Stefanis, C., Hashish: studies of long-term use. New York, Raven Press, 1977. 181 p. (p. 79-89).

A study of the acute effects on the electroencephalogram (EEG) of Greek long-term hashish users by the smoking of large doses of various cannibis preparations is reported. The EEG was recorded for 10 min before and for 30 min after smoking of: 1) marihuana containing 78mg of delta9-tetrahydrocannabinol (delta9-THC); 2) hashish containing 90mg of delta9-THC; 3) hashish containing 180mg of delta9-THC; 4) 100mg of pure delta9-THC mixed with tobacco; and 5) placebo. The principal EEG effects produced by the active substances were: 1) a decrease in the mean alpha frequency; 2(a decrease in beta activity; and 3) a biphasic effect on theta activity. These effects were similar for all active substances, and different from placebo. The degree and duration of the effects increased with the amount of delta9-THC and decreased with the amount of cannabidiol in the smoked material.

000745 Wretlind, Marita; Pilbrant, Ake; Sundwall, Anders; Vessman, Jorgen. Research Department, AB KABI, S-10425 Stockholm, Sweden **Disposition of three benzodiazepines after single oral administration in man.** Acta Pharmacologica et Toxicologica (Kobenhavn). 40(Supplement 1):28-39, 1977.

Three benzodiazepines in equipotent doses; oxazepam 15mg, dipotassium chlorazepate 10mg and diazepam 5mg, were administered in single, oral doses to seven healthy volunteers in a three way crossover study, and serum concentrations of oxazepam, N-desmethyldiazepam and diazepam were followed for 72 hours by gas chromatography and electron capture detection. The absorption of diazepam was most rapid and the mean time required to reach peak serum concentration was 45 minutes, followed by N-desmethyldiazepam 80 minutes and oxazepam 114 minutes. The serum concentration decay curves were biphasic with terminal mean half-lives of 48, 62, and 11 hours for diazepam, N-desmethyldiazepam and oxazepam, respectively. The mean and individual serum concentration time data were fitted to a two compartment open model with first order absorption using a nonlinear least square program. The mean serum data fitted the model well. The same rank order was obtained with mean absorption half-lives as when comparing mean peak times while slightly shorter terminal half-lives were obtained in the curve fitting of mean serum data. 19 references. (Author abstract)

000746 Zatz, Martin. Laboratory of Clinical Science, NIMH, Bethesda, MD 20014 **Mechanisms of supersensitivity. (Unpublished paper).** Bethesda, MD, NIMH, 1977. 30 p.

Some of the factors which determine the magnitude of the response of a cell to a given dose of exogenous agonist are studied. Supersensitivity is defined as a reduction in the concentration of agonist required to elicit a given response. Some mechanisms which affect sensitivity include changes in the access of the agonist to the site of action, changes in the rate of metabolic destruction of the agonist, changes in the uptake process, changes that affect the amount of released neurotransmitter, changes in the receptor, changes in the transduction of the interaction into intracellular signals, and changes in the response apparatus itself. The first four mechanisms are presynaptic and the final three are postsynaptic. Changes in sensitivity are determined through study of the dose response curve. Several procedures which can be used to produce changes in sensitivity are reviewed. It is suggested that mechanisms may participate in the regulation of sensitivity in each tissue, and the mechanisms involved may vary with the tissue, the agonist, and the procedure employed to elicit change. 14 references.

14 MECHANISM OF ACTION: BEHAVIORAL

000747 Ashton, Heather; Millman, J. E.; Telford, Rosemary; Thompson, J. W. Clinical Psychopharmacology Unit, Department of Pharmacological Sciences, University of Newcastle-upon-Tyne, England **The use of event-related slow potentials of the human brain as an objective method to study the effects of centrally acting drugs.** Neuropharmacology (Oxford). 16(7/8):531-532, 1977.

In a paper presented at the Proceedings of the British Association for Psychopharmacology, July 1976, Cambridge, England, an experimental method to study the effects of centrally acting drugs is proposed using event related slow potentials of the human brain. The magnitude of the contingent negative variation (a slow negative shift occurring maximally at the vertex with reference to the mastoid process when a warning stimulus is followed by an imperative stimulus which requires a subject response) is used as an objective measure of the degree of alertness of the subject to indicate drug effects. Thus, drugs with known stimulant or depressant properties produce a respective increase or decrease in the magnitude of the contingent negative variation. Typical effects produced by oral doses of caffeine citrate and nitrazepam are reported as significant in terms of the contingent negative variation, whereas they did not produce significant alterations in heart rate, finger tip temperature, or any subjective effects. Similar results have been obtained with pemoline and diazepam. Cigarette smoking produced biphasic as well as stimulant and depressant effects. It is concluded that the contingent negative variation can be used as a sensitive, reproducible, quantitative, and objective test for studying the central effects of drugs in man. 3 references. (Author abstract modified)

000748 Ballas, Costas; Boulougouris, John; Liakos, Aris; Stefanis, Costas. Department of Psychiatry, University of Athens School of Medicine, Athens, Greece **Withdrawal from cannabis: laboratory tests and clinical observations.** In: Stefanis, C., Hashish: studies of long-term use. New York, Raven Press, 1977. 181 p. (p. 147-149).

Results of laboratory tests and clinical observations performed as part of a study of the effects of cessation of cannabis smoking in Greek subjects with a long history of hashish use are reported. During a 6 day hospitalization, half of the subjects smoked marihuana ad libitum during 30 min sessions twice daily for 3 days, followed by placebo twice daily for 3 days, while the remainder received placebo first. The tests administered included: 1) a neurological examination, including corneal and deep tendon reflexes, vibration sense, coordination tests, muscle strength, tremor, and eye movements for nystagmus; 2) a chest X-ray; 3) examination of blood samples for liver function tests, blood counts, sedimentation rate, blood sugar, uric acid, lactic acid, cholesterol, nonesterified lipid acids, 17-ketosteroids, and catecholamines (epinephrine and nonrepinephrine); 3) self-rating scales in which subjects rated anxiety, depression, fatigue, restlessness, irritability, sexual desire, appetite, and abdominal symptoms; 4) a structured psychiatric interview in which general behavior, body image, imagination, perceptual distortions, bodily sensations, hallucinations, speech (quality, quantity, and rate), and the degree of suspiciousness were assessed; and 5) an assessment of the subject's adjustment on the ward, motility, cooperation with staff, talkativeness, and the presence or absence of abnormal behavior such as irritability or outbursts of aggressive behavior. No overt clinical symptoms or laboratory findings indicating a cannabis physical withdrawal syndrome were seen.

000749 Bauer, A. M. Neur.-Psych. Klin. des Stadt. Krankenhauses, Gotenstr. 6-8, D-6230 Frankfurt am Main/Hochst, Germany **/Treatment of senile psychoses with Distraneurin mixture./** Die Behandlung von Alterspsychosen mit Distraneurin-Mixtur. Medizinische Welt (Stuttgart). 28(11):549-550, 1977.

The efficacy of Distraneurin (chlormethiazol) mixture in the treatment of symptomatic senile psychosis was investigated. Marked cerebral decompensation may lead to psychotic behavior which families and nursing home personnel cannot manage. Sedatives may amplify the agitation or induce loss of consciousness. Neuroleptics may affect the circulation or produce extrapyramidal side-effects. For these reasons, potent neuroleptics are best limited to treatment of endogenous or endoform psychoses. Symptomatic senile psychosis may be controlled with chlormethiazol (Distraneurin), the thiazol fraction of vitamin B1, which is an effective sedative. A liquid form of Distraneurin was administered to 42 hospitalized patients over 4 months. Three doses of 5g each were given during the day, and 5 to 20g at bedtime. Agitation subsided in 6 to 14 days, but disorientation and confabulation continued. After 2 weeks, the preparation was given only at night, in a single dose of 5 to 15g in 36 cases, followed by a second intake of 5 to 10g in six cases. Results remained favorable and no side-effects were noted. 11 references.

000750 Bixler, Edward O.; Kales, Anthony; Soldatos, Constantin R.; Kales, Joyce D. Sleep Research and Treatment Center, Pennsylvania State University, Milton S. Hershey Medical Center, Hershey, PA 17033 **Flunitrazepam, an investigational hypnotic drug: sleep laboratory evaluations.** Journal of Clinical Pharmacology. 17(10):569-578, 1977.

Three sleep laboratory evaluations of flunitrazepam, under investigation as a hypnotic drug, are reported. The objective of these studies was to evaluate comprehensively the effectiveness of flunitrazepam for inducing and maintaining sleep. In addition, each study also evaluated the effects of the drug on sleep stages and related parameters. In doses of 1mg.,flunitrazepam was not effective for either inducing or maintaining sleep. In doses of 2mg.,it significantly improved both sleep induction and maintenance on short-term drug administration. Following drug withdrawal, the degree of sleep disturbance returned to baseline values. 13 references.

000751 Bogyi, Gertrude. Universitatsklinik fur Neuropsychiatrie des Kindes und Jugendalters, Wahringer Gurtel 74-76, A-1090 Vienna, Austria **/Pharmacopsychological investigation of the effect of sedatives on memory and learning performance in children and adolescents./** Pharmakopsychologische Untersuchung zur Wirkung sedierender Pharmaka auf Gedachtnis- und Lernleistung bei Kindern und Jugendlichen. Zeitschrift fur Kinder- und Jugendpsychiatrie (Stuttgart). 5(1):66-71, 1977.

The effect of sedatives on the memory and learning performance of children and adolescents was studied. Thirty children treated with propericyazine or oxazepam at three different times were tested for reaction time, attention, concentration, and memory. Results showed that both drugs initially had a negative effect on performance, but that after approximately 2 weeks of medication the original level was attained. These results appear significant in the light of numerous psychopharmacological preparations dispensed in daily practice. 6 references. (Journal abstract modified)

000752 Brand, H. J.; Moller, A. T. Department of Psychology, University of Stellenbosch, Stellenbosch 7600, South Africa **The influence of pyrithioxine on certain factors of intel-**

ligence. Journal of Abnormal Child Psychology. 5(2):171-176, 1977.

In a study of the influence of pyrithioxine on certain factors of intelligence, a double-blind trial was made with 22 pairs of visually handicapped children who were equal in IQ and chronological age. No improvement in academic achievement or general interest in classroom activities was found after the treatment period, but an improvement of abstraction ability was noticed. In general these results do not confirm previous findings as to the positive effects of pyrithioxine medication on memory, academic achievement, and neural conductivity. 21 references.

000753 Cavenar, Jesse O.; Nash, James L. Psychiatry Service, Veterans Administration Hospital, Durham, NC 27705 **Narcoanalysis: the forgotten diagnostic aid.** Military Medicine. 142(7):553-555, 1977.

The history of the use of narcoanalysis is reviewed and its potential and use in the diagnosis and treatment of various disorders is described. Narcoanalysis is judged to be a valuable diagnostic aid both in psychogenic and organic disorders. In particular, utilization of the technique to distinguish severe neurotic symptoms from latent schizophrenic symptoms, to distinguish between psychotic depression with severe retardation or catatonic schizophrenia in mute, noncooperative patients, and to determine the focal conflict in neurosis is discussed. Various drugs used and techniques involved in narcoanalysis are appraised. 10 references.

000754 Crayton, John W.; Meltzer, Herbert Y.; Goode, David J. Department of Psychiatry, University of Chicago, Chicago, IL **Motoneuron excitability in psychiatric patients.** Biological Psychiatry. 12(4):545-561, 1977.

Excitability at the alpha-motoneuron pool was studied by measuring the spinal monosynaptic reflex responses of soleus muscle to paired stimuli in psychiatric patients and controls. Patients showed significant alterations in the recovery of excitability when compared with normal volunteers. Specifically, the value for the peak of secondary facilitation was reduced in five of eight chronic schizophrenic patients, while the following through in the recovery cycle was reduced in nine of eighteen acutely schizophrenic patients. Drug effects were studied in 10 patients. Phenothiazine antipsychotic medication tended to enhance recovery of excitability. Patients of all types showed alterations of excitability. The altered excitability may reflect one aspect of a widespread abnormality of CNS function or may be a specific response to a supraspinal defect in neurophysiological activity in psychotic patients. 33 references. (Journal abstract modified)

000755 Darley, C. F.; Tinklenberg, Jared R.; Roth, W. T.; Vernon, S.; Kopell, B. S. Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, Stanford, CA 94305 **Marijuana effects on long-term memory assessment and retrieval.** Psychopharmacology (Berlin). 52(3):239-241, 1977.

The ability of 16 college educated male subjects to recall from long-term memory a series of common facts was tested during intoxication with marihuana extract calibrated to 0.3mg/kg delta9-tetrahydrocannabinol and during placebo conditions. The subjects' ability to assess their memory capabilities was then determined by measuring how certain they were about the accuracy of their recall performance and by having them predict their performance on a subsequent recognition test involving the same recall items. Marihuana had no effect on recall or recognition performance. These results do not support the view that marijuana provides access to facts in long-term storage which are inaccessible during nonintoxication. During both marihuana and placebo conditions, subjects could accurately predict their recognition memory performance. Hence, marihuana did not alter the subjects' ability to accurately assess what information resides in long-term memory even though they did not have complete access to that information. 7 references. (Author abstract)

000756 Davis, G. C.; Duncan, W. C.; Gillin, J. C.; Bunney, W. E., Jr. Biological Psychiatry Branch, NIMH, Bethesda, MD 20014 **Failure of naloxone to affect human sleep.** Communications in Psychopharmacology. 1(5):489-492, 1977.

The effects of naloxone, a narcotic antagonist, on various sleep parameters was investigated in a double-blind study, to examine the role of endogenous opiate like substances in sleep. Six sleeping subjects were administered either naloxone or a placebo, and their sleep patterns were monitored. Naloxone failed to alter sleep EEG variables suggesting that endogenous opiate like substances may not play a role in sleep regulation. It is suggested that higher doses of naloxone and longer acting antagonists should be tested before endorphin effects on sleep are ruled out. 9 references. (Author abstract modified)

000757 Deisenhammer, E. Wagner-Jauregg-Krankenhaus, Wagner-Jauregg-Weg 15, A-4020 Linz, Austria /**Effect of dipropyl acetate (Convulex) on personality changes in epileptics: preliminary report./** Beeinflussung der Wesensveranderung Anfallskranker durch Dipropylazetat (Convulex): vorlaufige Mitteilung. Wiener Medizinische Wochenschrift (Wien). 127(12):370, 373, 1977.

Possible personality modification of acute and chronic psychopathological states due to epilepsy through the use of dipropyl acetate (Convulex) was investigated. The reaction of 106 epileptics (aged 15 or below) to the drug was tested with regard to frequency of seizure, changes in EEG, and personality changes. Patients were maintained on conventional anticonvulsants for 3 months and received dipropyl acetate for the next 3 months. Half the group received the original drug in addition to Convulex. Both groups showed improvement in all three parameters. Comparison of results indicated that the lack of sedation associated with dipropyl acetate was not the cause of subsequent personality changes. A possible psychotropic activity is assumed to occur via inhibition of gamma-aminobutyric acid-(GABA)-transaminase. The increase in GABA levels due to dipropyl acetate could be responsible for brain organic enhancement of vigilance and learning attitude. 11 references.

000758 Dornbush, Rhea; Fink, Max. Reproductive Biology Research Foundation, St. Louis, MO **Ad libitum consumption and abstinence.** In: Stefanis, C., Hashish: studies of long-term use. New York, Raven Press, 1977. 181 p. (p. 111-119).

A study of the effects of the cessation of ad libitum smoking of marihuana in Greek subjects with a long history of hashish use is reported. Subjects smoked marihuana cigarettes containing 26mg delta9-tetrahydrocannabinol each ad libitum during two 30 min smoking periods daily for 2 days prior to being admitted to the hospital. During 6 days hospitalization, half of the subjects received placebo cigarettes during each of two 30 min daily smoking sessions for 3 days followed by marihuana cigarettes for 3 days (order 1), and half of the subjects received the marihuana first (order 2). The number of cigarettes smoked at each session was recorded and possible presence of withdrawal symptoms during the placebo period

was investigated. The subjects smoked a greater number of cigarettes in the placebo/marihuana order than in the marihuana/placebo order. In each instance, fewer cigarettes were smoked during the second daily session than during the first session. Within each order, the number of cigarettes smoked decreased on each of the 3 days. No withdrawal symptoms were observed during the placebo period. It is not clear whether the increase in the amount of marihuana consumed after a forced abstinence period (order 1) represents a physiological or a psychological response. Biochemical and metabolic factors which may influence the duration of action of the drug in chronic users are discussed.

000759 Dornbush, Rhea; Kokkevi, Anna. Reproductive Biology Research Foundation, St. Louis, MO **Acute effects of cannabis on cognitive, perceptual, and motor performance in chronic hashish users.** In: Stefanis, C., Hashish: studies of long-term use. New York, Raven Press, 1977. 181 p. (p. 69-78).

A study of the acute effects of smoking large doses of various cannabis preparations on memory, alertness, time sense, mental coordination, and motor performance in Greek long-term hashish users is reported. Each subject smoked: 1) marihuana containing 78mg of delta9-tetrahydrocannabinol (delta9-THC); 2) hashish containing 90mg of delta9-THC; 3) hashish containg 180mg of delta9-THC; 4) 100mg pure delta9-THC mixed with tobacco; and 5) placebo. The tests given were: 1) digit span, forward and backward, in which the subject is asked to repeat ascending lengths of up to nine digits both forward and backward; 2) barrage de signe, in which the subject is asked to cross out the symbols on a sheet that are the same as three standard symbols; 3) time estimation, in which the subject is asked to estimate the length of time of the barrage de signe task; 4) serial sevens, in which the subject is given a number and asked to subtract seven from that number until a designated goal is reached; and 5) star tracing, in which the subject is asked to draw a star by following the dots on the page. The tests of mental functioning were adversely affected by delta9-THC. These effects, in all but one instance, were short lived and no longer present 70 min after smoking 180mg delta9-THC as hashish. This dose also adversely affected barrage de signe (this disruption persisted at 70 min after smoking), time estimation, and the serial sevens task. Marihuana adversely affected performance in the barrage de signe and time estimation tasks. Performance was no different than with placebo with 90mg delta9-THC as hashish. Performance was improved in the barrage de signe task after 100mg pure delta9-THC. This finding is attributed to a practice effect, since the pure delta9-THC was always administered last although the other substances were administered in a random fashion.

000760 Dornbush, Rhea; Kokkevi, Anna. Reproductive Biology Research Foundation, St. Louis, MO **Withdrawal from cannabis: psychological test performance.** In: Stefanis, C., Hashish: studies of long-term use. New York, Raven Press, 1977. 181 p. (p. 121-133).

A study of the effects of cessation of ad libitum cannabis smoking on the psychological test performance of Greek subjects with a long history of hashish use is reported. During a 6 day hospitalization, half of the subjects smoked marihuana ad libitum for 30 min twice a day for 3 days followed by placebo twice a day for 3 days while the other half of the subjects received the placebo first. Descriptions of each of the tests of mental functioning administered (i.e. serial sevens, barrage de signe, time estimation, digit symbol substitution test (DSST), and number ordination) are given. In the serial sevens task, performance was imparied after marihuana smoking regardless of whether the marihuana was smoked before or after the abstinence period. There was no effect on time estimation. In the barrage de signe, DSST, and number ordination tasks, performance was always better during the second 3 day period than during the first 3 day period, regardless of whether drug or placebo was given first. This finding suggests the existence of practice effects (positive transfer) which are observed both immediately as well as 2 hr after smoking. The positive transfer from placebo to marihuana 2 hr after smoking is greater than it is immediately after smoking, indicating a less intense but still measurable drug effect 2 hr after smoking. This is consistent with the time course of the drug effect.

000761 Drachman, David A. Dept. of Neurology, University of Massachusetts Medical Center, 55 Lake Avenue North, Worcester, MA 01605 **Memory and cognitive function in man: does the cholinergic system have a specific role?** Neurology. 27(8):783-790, 1977.

To determine whether the disruption in the memory/cognitive (M/C) performance in animals and man that results from interference with cholinergic function is due to a specific relation of cholinergic neurons to M/C function, or whether the effect is nonspecific, resulting either from alteration of alertness of attention or from a "mass action" effect with loss of functioning neurons, scopolamine was given to normal subjects to produce M/C impairment. Half of the test subjects then received physostigmine and half d-amphetamine. Results indicate that physostigmine, a pharmacologic antagonist of scopolamine, markedly improved M/C functions. However, amphetamine failed to produce M/C improvement, although alertness was improved and activity in catecholaminergic neurons presumably increased. It is posited that this comparison supports a specific role for cholinergic neurons in M/C processes. It is suggested that possible mechanisms of cholinergic neural function in memory include plasticity of cholinergic synapses, as well as other acetylcholine dependent operations of the limbic system crucial to memory. 64 references. (Author abstract)

000762 Fabre, Louis F., Jr.; Smith, Ward T. Fabre Clinic, 5503 Crawford Street, Houston, TX 77004 **Multi-clinic crossover comparison of triazolam (Halcion) and placebo in the treatment of co-existing insomnia and anxiety in anxious out-patients.** Diseases of the Nervous System. 38(6):487-491, 1977.

To test the efficacy and tolerance of triazolam in the treatment of insomnia and anxiety, a multiclinic, double-blind crossover study of 45 anxious, insomniac outpatients who received either triazolam (Halcion) 0.25mg or placebo at bedtime was conducted. After 7 days the medications were crossed over. The dosage was doubled after nights two and nine if good sleep was not produced. Three patients dropped out, two on placebo (one for side-effects and one for lack of efficacy) and one on triazolam (due to misunderstanding instructions). Analysis of sleep questionnaire data showed superiority of triazolam to placebo in all parameters. The incidence of dreams was not affected. Analysis of antianxiety efficacy showed that triazolam was superior to placebo in all parameters, both physician's and self-ratings. No side-effects or abnormal laboratory values of significance were attributable to triazolam. 20 references. (Author abstract modified)

000763 Fowler, L. K. Montedison Pharmaceuticals, Barnet, Hertfordshire, England **Temazepam (Euhypnos) as a hypnotic: a twelve-week trial in general practice.** Journal of International Medical Research (Northampton). 5(5):295-296, 1977.

To evaluate the clinical efficacy and safety of temazepam, 147 patients requiring a hypnotic took soft gelatine capsules containing 10mg temazepam (Euhypnos), 10 to 30mg at night, for up to 12 weeks. One hundred and thirty three patients (90.5%) completed 12 weeks on drug. Hypnotic performance was rated good or very good in 90% of their assessments and 93.2% of the assessments recorded no hangover effect. Adverse reactions were occasional headaches and nausea. There were no drug related accidents. One hundred and forty two patients (96.6%) said there was no adverse effect on their work. Seven patients who did not complete 23 weeks resumed normal sleep patterns and had no further need for hypnotics. 2 references. (Author abstract modified)

000764 Fowler, L. K. Montedison Pharmaceuticals, Barnet, Hertfordshire, England **Temazepam (Euhypnos) as a hypnotic: a multicentre trial in general practice.** Journal of International Medical Research (Northampton). 5(5):297-300, 1977.

In a one week study of 236 patients, soft gelatine capsules containing 10mg temazepam (Euhypnos) were evaluated as a hypnotic in general practice. Doses of 10 to 30mg were generally well tolerated and performed satisfactorily in 76% of the patients. Seventy two percent experienced no hangover effect and 72% rated Euhypnos as good as or better than their previous hypnotic drugs. 2 references. (Author abstract)

000765 Freemon, Frank R.; Al-Marashi, Murtadha S. H.; Lee, John C. M. Neurology Service, Veterans Administration Hospital, Nashville, TN 37203 **The effect of a new benzodiazepine on the polygraphically monitored sleep of normal volunteers.** Journal of Clinical Pharmacology. 17(7):398-401, 1977.

All night sleep was polygraphically monitored from ten normal volunteers who took placebo and three dosage levels of a new benzodiazepine hypnotic, SCH 16134, in a double-blind, crossover design. All dosages of the drug decreased the time to fall asleep, and the two highest dosages also decreased interspersed wakefulness. REM sleep was suppressed, but slow wave sleep was not affected in this experiment. The subjective quality of sleep was improved by the new hypnotic. One subject reported that he felt lethargic the day after the largest dose. 10 references. (Author abstract)

000766 Fried, P. A. Department of Psychology, Carleton University, Ottawa, K1S 5B6 Canada **Behavioral and electroencephalographic correlates of the chronic use of marijuana -- a review.** Behavioral Biology. 21(2):163-196, 1977.

Behavioral and electroencephalographic effects of long-term use of marihuana or its constituents are reviewed. It is concluded that tolerance develops to the behavioral and electroencephalographic depressant aspects of the cannabis drugs but little attentuation develops to the stimulant effects. The rate of tolerance development is considerably influenced by learning factors such as the opportunity or necessity to make behavioral responses that counteract the decrements in performance resulting from the drug's influence. Evidence is presented indicating that the animal and human literature are in considerable agreement if socially acquired cues and expectancies and dosage/frequency parameters are taken into consideration. 204 references. (Author abstract)

000767 Gillis, John S.; Parkison, Steven C. Oregon State University, Corvallis, OR **The effects of phenothiazines on complex learning.** Current Therapeutic Research. 22(3):349-355, 1977.

To evaluate the effects of four antipsychotic agents (chlorpromazine, trifluoperazine, thioridazine, and fluphenazine decanoate injection) on performance with multiple cue, probability learning tasks, 32 inpatient schizophrenics were selected for inclusion on the basis of their present chemotherapy regimens. Learning was evaluated in terms of overall adequacy and its component indices, knowledge and cognitive control. Subjects receiving fluphenazine injection performed significantly better than those receiving any of the other agents, while there were no differences among the remaining three treatment groups, a pattern repeated on all indices of task performance. 7 references. (Author abstract)

000768 Gottfries, Carl Gerhard. Psykiatriska kliniken, Lasarettet, S-901 85 Umea, Sweden /**Long-term treatment with neuroleptic drugs.**/ Langtidsbehandling med neuroleptika. Nordisk Psykiatrisk Tidsskrift (Kungsbacka). 30(7):491-497, 1977.

Behavioral effects and relapse rates from 28 case studies of schizophrenic patients treated with neuroleptic drugs and placebo are examined. The studies included 3766 patients who were under observation between 2 weeks and 48 months. The relapse rates varied between 0% and 49% among those who received neuroleptic drugs and between 0% and 100% among those in the placebo groups. Patients taking high doses of neuroleptic drugs showed a higher relapse rate than others. Temporary destabilization effects, mostly with symptoms of hallucination and agitation, occurred due to the long-term neuroleptic treatment. The frequency of tardive dyskinesia varied between 1% and 41% and remained despite neuroleptic drug treatment in 65% of the cases. 39 references.

000769 Gross, Mortimer D. Medical Center, University of Illinois, Chicago, IL 60612 **Improvement with L-dopa in a hyperkinetic child.** Diseases of the Nervous System. 38(7):556-557, 1977.

The case of a 14-year-old hyperkinetic boy who had proven unresponsive to other medications but sustained a moderate but definite improvement in behavior and learning following L-dopa treatment is presented. Initial referral at 5 years old was for hyperactivity, unintelligible speech and poor muscle coordination. Behavior and learning problems until the age of 14 had been unresponsive to phenytoin, dextroamphetamine, imipramine, methylphenidate, haloperidol, thioridazine, and prochlorperazine. At 14, 25mg Carbidopa in combination with 250mg L-dopa was prescribed on a four times daily schedule. Definite clinical improvement in behavior and concentration was noted and the patient reported feeling better. Following 2 months treatment, a placebo was substituted for the L-dopa and Carbidopa; a regression to pretreatment behavior patterns was noted within 3 days. Reinstitution of medication resulted in marked improvement within 3 days. Results suggest that dopamine pathways may be involved in some cases of hyperkinesis, perhaps as part of a more complex process in which all monoaminergic pathways are to some extent involved. 5 references.

000770 Hartmann, Ernest; Orzack, Maressa Hecht; Branconnier, Roland. Tufts University School of Medicine, Medford, MA 02155 **Sleep deprivation deficits and their reversal by d- and l-amphetamine.** Psychopharmacology (Berlin). 53(2):185-189, 1977.

Vigilance performance, waking EEG patterns and mood before and after one night of sleep deprivation in normal males were studied. The effects of d-amphetamine 10mg, l-amphetamine 10mg and placebo on these measures were compared. Changes were found in all three measures after one

night of sleep deprivation. It was concluded that d-amphetamine was more powerful than l-amphetamine in reversing sleep deprivation effects on vigilance and on waking EEG. 22 references. (Author abstract)

000771 Harvey, P. G.; Clayton, A. B.; Betts, T. A. Department of Psychiatry, University of Birmingham, Birmingham 15, England **The effects of four antihypertensive agents on the Stroop Colour-Word Test in normal male volunteer subjects.** Psychopharmacology (Berlin). 54(2):133-138, 1977.

To study the effect of four antihypertensive agents on the Stroop Color-Word Test, 60 healthy male volunteers were randomly assigned to one of six treatment groups on a double-blind basis. Treatments included atenolol (50mg t.d.s.)methyldopa (250mg), propanolol (40mg), reserpine (0.2mg), placebo, and control (no tablets). Tests were performed before treatment, 2 h after the first dose, after seven doses, and after 21 doses. Performance on the Stroop test was assessed in terms of word reading speed and interference scores based on the difference between the incongruous color word and color card reading speed. No effects of central beta-blockers were observed, but personality x drug interactions were found, particularly in the reserpine group. 33 references. (Author abstract modified)

000772 Janson, Paul A.; Watt, J. Brooks; Hermos, John A. Medical Service and Substance Abuse Treatment Unit, Boston Veterans Administration Hospital, Boston, MA **Doxepin overdose: success with physostigmine and failure with neostigmine in reversing toxicity.** Journal of the American Medical Association. 237(24):2632-2633, 1977.

A case of a 34-year-old polydrug abuser who overdosed with doxepin, a tricyclic antidepressant, and where physostigmine salicylate rapidly reversed the toxic effects is reported. Of added clinical interest was an apparent failure of neostigmine methylsulfate to reverse CNS and cardiac toxicity seen in this case. It is concluded that although tricyclic antidepressants are not frequently used by hard core addicts and physical dependence probably does not occur, the incidence of polydrug abuse is increasing, as is the need for effective treatment of severe toxicities resulting from the combined use of psychoactive compounds. 12 references.

000773 Kimura, Sadamu; Mitsuya, Hideaki; Aoki, Naosuke. Department of Neuropsychiatry, Kansai Medical University, Osaka, Japan **Personality modifications due to long-term psychopharmacotherapy: in case of chronic schizophrenia.** Folia Psychiatrica et Neurologica Japonica (Tokyo). 31(2):195-203, 1977.

The influence of psychotropic agents on the personality of schizophrenic patients undergoing long-term treatments with major tranquilizers is discussed, based on clinical experiences with chronic hospitalized schizophrenics showing personality modifications. The double actions of psychotropic agents are discussed in regard to excessive reduction and suppression of aggression and the danger of intrusion on the personality of patients, suggesting that under the influence of generalized pharmacogenic obedience, the reduction or increase of activities results in dehumanization and deindividualization. It is concluded that while most psychotropic agents are effective in removing such pathological symptoms as delusions and hallucinations, they also exert negative influence on the normal defenses of ego not involved in the morbid processes. 39 references.

000774 Kjellman, Bengt F.; Karlberg, Bengt E.; Kagedal, Bertil. Psykiatriska kliniken, Regionsjukhuset, S-581 85 Linkoping, Sweden /**Affective illness treated with lithium: effects on thyroid function and psychic status.**/ Litiumbehandling av affektiv sjukdom: effekter pa tyroideafunktion, psykiskt status och psykisk funktionsformaga. Nordisk Psykiatrisk Tidsskrift (Kungsbacka) 30(7):528-540, 1977.

Effects of lithium on thyroid function were studied in 151 patients for a period of 14 months. Of the participants, 64% were women. At the end of the treatment a questionnaire was presented and answered by 141 patients. The results of the treatment with lithium show that 39% developed clinical hypothyrodism and in 16% pathological thyroid function was observed. An elevation of thyrothropin (6 microgram/l) was established in 21 patients. Women seemed to be more prone to develop hypothyrodism and changes in thyroid function than men. Hypothyroid patients showed an overrepresentation of heredity factors for thyroid disorders, compared to euthyroid patients. The answers from the questionnaire showed that levels of thyroid hormone over 10 microgram/l influenced cognitive functions, and levels over 25 micrograms/l resulted in apathy. 36 references.

000775 Kline, Nathan S.; Li, Choh Hao; Lehmann, Heinz E.; Lajtha, Abel; Laski, Edward; Cooper, Thomas. Rockland Research Institute, Orangeburg, NY 10962 **Beta-endorphin-induced changes in schizophrenic and depressed patients.** Archives of General Psychiatry. 34(9):1111-1113, 1977.

In an investigation of beta-endorphin induced changes in schizophrenic and depressed patients, two trials of intravenous beta-endorphin were carried out with five subjects. In the first trial, intravenous beta-endorphin appeared to rapidly worsen the cognitive difficulties of three schizophrenic patients and, just as rapidly, improve the mood of two depressed patients. In the second trial, four of the five original patients failed to show objective or subjective changes after receiving a repeat injection. An additional depressed patient did show the expected relief. It is concluded that the findings present evidence that beta-endorphin can be safely given to psychiatric patients, and that, whatever the mechanism, has pharmacologic activity in man. 12 references.

000776 Liakos, Aris; Boulougouris, John. Department of Psychiatry, University of Athens School of Medicine, Athens, Greece **Subjective experiences of cannabis use in long-term users.** In: Stefanis, C. Hashish: studies of long-term use. New York, Raven Press, 1977. 181 p. (p. 39-42).

The subjective effects of hashish use reported by long-term hashish users during the course of a series of studies conducted in Greece of the behavioral, medical, psychological, neurological, and social consequences of long-term hashish use are presented. More than 50% of the subjects reported effects related to elevated mood, including euphoria, talkativeness, laughter, relaxation, and ideas of superiority. Other pleasant effects reported concerned: 1) memory (both increased recall and decreased recall); 2) perception (enhanced perception, floating sensation); 3) thinking (ideas of superiority, thoughtfulness, slow thinking); 4) performance (working better, driving better); and 5) somatic effects (dry mouth, increased appetite, and increased sexual desire). Unpleasant effects, such as panic attacks, persecutory ideas, thought disorder, depression, psychomotor retardation, dizziness, illusions, hallucinations, somatic effects (palpitation, sweating, sleep disorders, vomiting, and agitation), and inability to work, were reported by fewer users and were experienced less frequently than the pleasant effects. These results are com-

pared to those obtained in studies in the United States and in Jamaica.

000777 Marcer, D.; Hopkins, Sandra M. Dept. of Psychology, Univ. of Southampton, Southampton S09 5NH, England **The differential effects of meclofenoxate on memory loss in the elderly.** Age and Ageing (London). 6(2):123-131, 1977.

In a double-blind investigation of the differential effects of the cerebral activator meclofenoxate on memory loss in the elderly, performance on free recall, digit span, recognition, past events, and prose passage tests by 76 elderly patients was studied. Results indicate that meclofenoxate appears to increase the consolidation of new information into long-term memory, but does not affect other aspects of remembering. It was also found that significantly more of the subjects receiving meclofenoxate reported an increased level of mental alertness. 10 references.

000778 Milkman, Harvey; Frosch, William. Drug/Alcohol Institute, Department of Human Services, Metropolitan State College, 1006 11th Street, Denver, CO 80204 **/Variables in the prolonged preference of heroin or amphetamines./** The drug of choice. Journal of Psychedelic Drugs. 9(1):11-24, 1977.

To determine variables among drug users in the preference of heroin or amphetamines, 10 users each of heroin and amphetamines were interviewed under conditions of abstinence and intoxication, using the Interview and Rating Scale for Ego Functioning. Data were analyzed to answer: 1) how preferential users differ from normals and each other under abstinent conditions; 2) how they differ when intoxicated; and 3) how the drug user differs within himself under conditions of abstinence and intoxication. Ego functions of heroin users were found to be deficient in comparison to amphetamine users and normals; ego functions of the amphetamine users, although rated high, were seen as a result of a consciously inflated sense of self-worth. Other variables are analyzed with respect to specific effects of the preferred drug. It is concluded that successful treatment of either heroin or amphetamine users must present alternative modes of satisfying those inner needs and wishes previously resolved through drug use. 13 references.

000779 Nakazawa, Yoichi; Kotorii, Makoto; Kotorii, Tatayu; Ohshima, Masachika; Hasuzawa, Hiroaki. Dept. of Neuropsychiatry, Kurume University, School of Medicine, Kurume, Japan **Individual variations in response of human REM sleep to amitriptyline and haloperidol.** Electroencephalography and Clinical Neurophysiology (Amsterdam). 42(6):769-775, 1977.

Individual variations in the response of human sleep to amitriptyline and haloperidol are studied in relation to the rebound elevation of rapid eye movement (REM) sleep following partial differential REM deprivation (PDRD). The administration of amitriptyline to 18 males ages 21 to 30 in a single oral dose of 25mg was followed by an inhibition of REM sleep in all subjects. This decrease was found to have a negative correlation with the percent increase in REM sleep following PDRD in individual subjects. The amount of REM sleep on the recovery night which followed the night of amitriptyline medication tended to correlate with the percent increase in REM sleep following PDRD in individual subjects. Haloperidol in a single oral dose of 1.5mg caused REM sleep to augment in some subjects but to inhibit in others. A significant correlation was noted between drug induced change in REM sleep and the increase in REM sleep following PDRD. 17 references. (Author abstract modified)

000780 Pelham, William E. Department of Psychology, Washington State University, Pullman, WA 99163 **Withdrawal of a stimulant drug and concurrent behavioral intervention in the treatment of a hyperactive child.** Behavior Therapy. 8(3):473-479, 1977.

To compare pharmacological and behavioral approaches in terms of their overall clinical effectiveness as well as to determine the long-term effectiveness of behavioral intervention in hyperactivity, the stimulant (methylphenidate) with which a 9-year-old hyperactive child was being treated was gradually withdrawn and replaced with a behavioral intervention program. The therapeutic program in home and school and the procedure used in withdrawing the drug are described. The case represented a relatively long-term intervention and included a period of 2 months during which time the parents and teacher of the child continued the intervention without professional involvement, as well as a followup check 11 months after termination. The results suggest that: 1) the child was being maintained on a dose of methylphenidate which was twice as high as that necessary to obtain maximal improvement in behavior; 2) the behavioral intervention was at least as effective as the stimulant therapy; and 3) the effects of the behavioral intervention were maintained after termination of active therapist involvement. 21 references. (Author abstract modified)

000781 Pickens, Roy; Cunningham, Marilyn R.; Heston, Leonard L.; Eckert, Elke; Gustafson, Linda K. Box 392, Mayo Psychiatry Research Unit, Univ. of Minnesota, Minneapolis, MN 55455 **Dose preference during pentobarbital self-administration by humans.** Journal of Pharmacology and Experimental Therapeutics. 203(2):310-318, 1977.

Eleven human subjects with established histories of sedative abuse were administered 200mg of sodium pentobarbital orally to determine drug half-life (metabolic rate) and magnitude of drug response (central nervous system tolerance), and subjects were then allowed to self-administer pentobarbital orally in 50mg/capsule doses. Daily drug intake and blood serum levels were measured. Results indicate that drug intake was inversely related to metabolic half-life and directly related to central nervous system tolerance. Morning serum levels during self-administration were directly related to the drug intake of the preceding day. For each subject, preferred dose size was inversely related to daily pentobarbital intake; however, as the capsule dose available for self-administration increased, total daily drug intake also increased, but no effect of drug intake was seen on grooming, self-maintenance, or social behaviors. The self-administration choice procedure provided information about the relative reinforcing properties of different doses of pentobarbital and presumably could be used to evaluate the relative reinforcing effects of other drugs. 19 references. (Author abstract modified)

000782 Pihl, R. O.; Spiers, Paul; Shea, Diane. Psychology Department, McGill University, Montreal, Quebec, Canada **The disruption of marijuana intoxication.** Psychopharmacology (Berlin). 52(3):227-230, 1977.

Whether marijuana intoxication could be disrupted by the presentation of an aversive noise was studied in 96 male volunteers divided into 4 drug conditions; coltsfoot; placebo; marijuana low dose; and marijuana high dose. Half smoked marijuana while listening to music in a relaxing environment, and half smoked marijuana in the same environment but had two 10 min periods of aversive noise superimposed over the music. A subjective measure of intoxication demonstrated significant drug and environmental group effects with suppres-

sion of self-report of intoxication being especially strong for the marijuana low dose noise group. The usual positive correlation between subjective measures and pulse rate measures of marijuana intoxication was interfered with by the noise effect. Although subjective ratings were suppressed, the noise group demonstrated significantly higher pulse rates than the music group. The results are discussed in terms of the effect of extraneous factors on marijuana intoxication, the significance of dosage in this type of research, and the nature of marijuana intoxication. 11 references. (Author abstract modified)

000783 Porges, Stephen W.; Bohrer, Robert E.; Keren, Gideon; Cheung, Michael N.; Franks, George J. University of Illinois at Champaign-Urbana, Urbana, IL 61801 **Autonomic imbalance: a substrate of hyperactivity.** Research Report, NIMH Grant MH-18909, 1976. 20 p.

Hyperactivity in children is studied as form of autonomic imbalance. Because the heartrate response pattern during sustained attention of the untreated hyperactivity appears deficient in parasympathetic activity, the influence of varying dose levels of methylphenidate on the parasympathetic component of heartrate was studied in a sample of 16 hyperactive children. An inverse relation between parasympathetic heartrate and dosage of methylphenidate was found. Data suggest that the hyperactive child, prior to pharmacological treatment, exhibits a dysfunction in autonomic balance which is mediated by methylphenidate. Statistical techniques are described which may prove useful in the study of neural control of the heart. 30 references.

000784 Roden, S.; Harvey, P.; Mitchard, M. Dept. of Psychiatry, Medical School, Birmingham, England **The influence of alcohol on the persistent effects on human performance of the hypnotics Mandrax and nitrazepam.** International Journal of Clinical Pharmacology and Biopharmacy (Munchen). 15(8):350-355, 1977.

A study of the influence of alcohol on the residual effects of a single dose of Mandrax (methaqualone plus diphenhydramine hydrochloride) or nitrazepam on three measures of human performance was reported in a paper presented at the Seventh International Symposium on Clinical Pharmacology held in Pavia, Italy, in September and October, 1976. Alcohol or placebo was administered 1 day, 2 days, or 3 days after administration of Mandrax, nitrazepam, or placebo, followed by measurement of S's kinetic visual acuity, administration of the Stroop test, and measurement of changes in mental state and arousal via administration of a visual analogue scale questionnaire. Interaction between alcohol and Mandrax was apparent from the results of the Stroop test and the visual analogue scale only on the third day following administration of a single dose of Mandrax. No interaction between alcohol and nitrazepam was clearly demonstrated. It is concluded that residual concentrations of the methaqualone present in the Mandrax enhanced the depressant action of alcohol 3 days after a single therapeutic dose of Mandrax was ingested. The results are discussed in terms of the nature of the tests administered and of their application to real life situations. 11 references. (Author abstract modified)

000785 Rosler, Hans-Dieter; Kleinpeter, Ursula; Gehrke, Regina; Hinz, Gundula; Krause, Gabriele. Nervenklinik der Wilhelm-Pieck-Universitat, Gehlsheimer Str. 20, DDR-2500 Rostock 9, Germany **/Effect of piracetam on brain-damaged, learning disabled children./** Erprobung von Piracetam bei hirnorganisch leistungsgeminderten Kindern. Psychiatrie, Neurologie und medizinische Psychologie (Leipzig). 29(6):350-359, 1977.

The efficacy of piracetam (Nootropil) as an enhancer of learning processes was tested with mentally impaired special school children. In a double-blind trial, piracetam was administered to two homogeneous groups of 32 and 34 8 to 12-year-old brain injured children. A daily dose of 1.2gm was given to second and third graders and 2gm was given to fourth graders for 13 weeks. The drug did not produce a lasting effect on the capacity to acquire and apply knowledge. Powers of concentration, proficiency, and behavior in and out of school were similarly unaffected. Patients receiving placebo showed a nonsignificant tendency toward improvement in well-being. The effects produced by the drug may thus be considered negative. 11 references.

000786 Rothenberg, S.; Schottenfeld, S.; Meyer, R. E.; Krauss, B.; Gross, K. Harvard-Boston University Center for Biobehavioral Studies in the Addictions, Harvard Medical School, Boston, MA **Performance differences between addicts and non-addicts.** Psychopharmacology (Berlin). 52(3):299-306, 1977.

Methadone addicts and nonaddict controls were tested before and after receiving up to 10mg of methadone on simple visual reaction time tests and on a vigilance type visual attention test. Addicts were faster than controls on predrug testing, although there were no predrug differences between groups on the attention task. Addicts maintained faster reaction times than controls even when money was offered as an incentive for speed. Additional methadone did not affect addict performance on any of the tasks. Methadone slowed control reaction times in a dose related fashion. No significant attention decrements were seen after methadone in controls. Visual reaction time differences between addicts and controls cannot be attributed to group differences in motivation or ability to attend. Slowing of reaction time with acute dose of methadone in controls cannot be attributed to the effect of the drug on attention. An hypothesized drug induced decrease in visual sensitivity with acute dose in controls and a drug induced increase in visual sensitivity with chronic dose in addicts can account for the presented data. 19 references. (Author abstract)

000787 Roubicek, J.; Major, I. Biological and Medical Research Division, Sandoz Ltd., CH-4002 Basel, Switzerland **EEG profile and behavioral changes after a single dose of clozapine in normals and schizophrenics.** Biological Psychiatry. 12(5):613-633, 1977.

Behavioral changes and EEG profile were studied after single 10mg doses of clozapine to healthy normals and schizophrenics. Clozapine, a powerful neuroleptic with unique clinical efficacy and without parkinsonian side-effects), has been shown to have an unusual EEG profile. The EEG changes after clozapine, especially when instrumentally quantified, demonstrated the predictive value of EEG. The similarities of the EEG profile of clozapine with the profile of thymoleptic compounds indicated its possible thymoleptic effect, which later proved to be the case with therapeutic studies in depression. The EEG profile of clozapine in volunteers is similar to the EEG profile in schizophrenics (with appropriately higher doses). Instrumental quantification was performed with spectral and iterative interval analysis to show the advantages of each method and also the complementary value of both of them. 20 references. (Journal abstract modified)

000788 Schott, G.; Seidel, K. Nervenklinik der Humboldt-Universitat, Schumannstr. 20/21, DDR-1040 Berlin, Germany

/Sex hormones and exhibitionism./ Sexualhormone und Exhibitionismus. Paracelsus (Wien). No. 5/6:129-130, 1977.

The effect of cyproterone acetate on hypersexuality and exhibitionism was investigated in three clinical cases. Antiandrogens reduce serum testosterone levels and render the hypothalamic erotization centers less responsive to sensory stimuli. Several studies have shown relatively high levels of free testosterone and total testosterone in the serum of male hypersexual patients when compared with controls. Three male exhibitionists received 50mg cyproterone acetate (Androcur) twice daily for 8 days, after which dosage was increased to 50mg t.i.d. The treatment produced lower plasma testosterone levels and distinct inhibition of sexuality.

000789 Sheard, Michael H. Yale University Medical Center, New Haven, CT 06520 **Aspects of the psychopharmacology of human aggression.** Psychiatry Digest. 38(5):23-30, 1977.

Factors contributing to human aggression are reviewed, the facilitating and inhibiting role of drugs in human aggression are examined, and the use of lithium as an inhibitory agent is discussed. Factors contributing to instrumental or pain elicited aggression are anger, fear, or sadness. Alcohol, barbiturates, and amphetamines appear to be associated with the facilitation of aggressive behaviors. Phenothiazines and butyrophenones have been found useful in inhibiting aggression in psychotic patients; antidepressants have proven efficacious in treating aggression secondary to depression; and hormonal agents have been used in the treatment of the aggressive sexual offender. Recent research indicates that lithium carbonate is capable of inhibiting aggression in both man and animals, possibly through its enhancement of brain serotonin metabolism. 34 references.

000790 Smith, Robert C.; Davis, John M. Texas Research Institute of Mental Sciences, 1300 Moursund, Texas Medical Center, Houston, TX 77030 **Comparative effects of d-amphetamine, l-amphetamine, and methylphenidate on mood in man.** Psychopharmacology (Berlin). 53(1):1-12, 1977.

The comparative effects of d-amphetamine, l-amphetamine, and methylphenidate were assessed in 16 normal subjects, using a double-blind, crossover placebo controlled design. Methylphenidate was intermediate in efficacy between d-amphetamine and l-amphetamine. The efficacy ratios for d-amphetamine/l-amphetamine on increasing euphoric mood in man were similar to the previously reported ratios of these two isomers in inducing or exacerbating psychosis in humans. These findings do not support the suggestion, made by Snyder and others, that the differential effects of d-amphetamine vs l-amphetamine on a specific type of behavior in man could be utilized to infer the predominance of noradrenergic vs dopaminergic mediation of amphetamine's effects on this behavior. 38 references. (Author abstract)

000791 Sommerbeck, Kurt W.; Theilgaard, alice; Rasmussen, Kurt e.; Lohren, Viggo; Gram, Lennart; Wulff, Karl. Epilepsy Departments, Filadelfia Colony, Dianalund, Denmark **Valproate sodium: evaluation of so-called psychotropic effect. A controlled study.** Epilepsia (Amsterdam). 18(2):159-167, 1977.

In a controlled study using triple-blind crossover, and placebo techniques, the effect of valproate sodium (VPA) on some simple and complex cognitive and motor functions in 20 hospitalized, previously therapy resistant epileptics was investigated with an extensive psychological test battery. Test results showed few significant differences between performance during VPA and placebo periods, the differences found indicating decreased performance during VPA treatment. In particular VPA reduced psychomotor tempo and, to a lesser degree, inhibited visuospatial analytic and synthetic functions. Other cognitive functions investigated remained unaffected. Objective psychological assessment of patients' condition during VPA treatment showed a slight degree of deterioration. Concurrent treatment with VPA and clonazepam (Rivotril) inhibited even further patients' psychomotor tempo, and objective psychological assessment supported the impression of this further deterioration in comparison to VPA treatment alone. The psychological test results did not correlate with either frequency of seizures, EEG evaluations from VPA and placebo treatment periods, or serum VPA level. 19 references. (Author abstract)

000792 Tress, Kathleen H.; El-Sobky, A. A. Neuropsychology Research Unit, Friern Hospital, London N11 3BP, England **Responses to intravenous heroin in dependent and nondependent volunteers.** Neuropharmacology (Oxford). 16(7/8):530-531, 1977.

In a paper presented at the Proceedings of the British Association for Psychopharmacology, July 1976, Cambridge, England, physiological and psychological responses to heroin in man were measured to identify and quantify tolerance developing responses in man. Heroin dependent and nondependent volunteers were tested prior to and following the intravenous administration of doses of heroin and a saline placebo. Dependent volunteers were given doses of heroin of one half, one third, and one sixth their daily prescription, and nondependent volunteers were given 2.5and 5.0mg heroin. Responses measured were subjective mood state, opiate symptoms, pupil diameter, respiration rate, and body temperature. Pupil diameter measures showed the classical tolerance pattern, dose related, and dose dependent in relation to the normal dose. Nondependent Ss showed more profound respiratory depression than dependent Ss, with dose related effects in the latter. A high degree of tolerance appeared to develop after exposure to small and large doses of heroin alike. Comparisons of body temperature fall between subject groups and dosage groups showed no differences between groups and no dose related effects. The subjective mood state measures showed an increase in subjective tranquilization with all doses of heroin for dependent volunteers, but not for nondependent volunteers. The number of opiate symptoms reported were fewer the larger the daily prescription, suggesting that physical effects of heroin were more noticeable to the nondependent S whereas the mental effects were more important for the dependent S. (Author abstract modified)

000793 Tulving, Endel. Dept. of Psychology, University of Toronto, Toronto, Canada **Context effects in the storage and retrieval of information in man.** Psychopharmacology Bulletin. 13(1):67-68, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, state dependent learning (SDL) is discussed with emphasis on context effects in information storage and retrieval and the encoding specificity principle. SDL induced by psychoactive drugs is mimicked in drug free situations where the context and cues available during learning and retrieval are systematically manipulated. The interaction between conditions of encoding and retrieval have suggested the encoding specificity principle which states that specific encoding operations performed by the cognitive system on the perceived stimulus determine exactly what information is stored about the encounter with that stimulus and

that the memory trace determined the specific retrieval conditions in which memory for the stimulus event can be recovered. The hypothesis that SDL is subsumed by the encoding specificity principle assumes that the basic processes mediating the effect of drugs on memory are essentially of the same kind as those initiated through cognitive operations in a drug free state. 6 references.

000794 Turner, Paul. Department of Clinical Pharmacology, St. Bartholomew's Hospital Medical College, London EC1A 7BE, England **Schizophrenia as a prostaglandin deficiency disease.** Lancet (London). No. 8020:1058, 1977.

The central effects of indomethacin in healthy volunteers when the drug was given after pretreatment with buffered aspirin are reported. About 15 min after oral ingestion of 100mg indomethacin one volunteer became very aggressive and almost paranoid, and three others became disoriented before they fell asleep, although plasma indomethacin levels were not higher than peak concentrations reached on other occasions without aspirin pretreatment when absorption was much slower, and when the only central effect noted was mild sedation. It is suggested that these central effects depended on the rate of rise of plasma indomethacin rather than on absolute levels. It is also suggested that the central effects might result, in part, from the summation of inhibitory effects of aspirin and indomethacin on prostaglandin synthesis. 1 reference.

000795 Zhukov, V. N. Lab. izysk. i izuch. sred. dlya lech. prof. nark. Instituta farmakologii AMN SSSR, Moscow, USSR **/Effect of neurotropic drugs on sleep disturbances caused by electrical stimulation of the hypothalamus in cats.** Vliyaniye neyrotropnykh veshchestv na narusheniye sna, obuslovlyennoye elektricheskoy stimulyatsiey gipotalamusa u koshek. Byulleten' Eksperimental'noy Biologii i Meditsiny (Moskva). 83(5):563-566, 1977.

Effects of neurotropic drugs on sleep disturbances caused by electrical stimulation of the hypothalamus were investigated in cats. The total period of sleep decreased as a result of the REM sleep deficit following rage reaction induced by electrical stimulation of the hypothalamus. Haloperidol, diazepam, nitrazepam, glutethimide, and pentobarbital failed to eliminate the sleep disturbances caused by electrical stimulation. Lithium hydroxybutyrate, dimedrol, and imipramine increased total sleep time by affecting the slow wave phase. Sodium hydroxybutyrate normalized the electrophysiological pattern of sleep by decreasing REM sleep latency and increasing the total REM time. 11 references. (Journal abstract modified)

15 TOXICOLOGY AND SIDE EFFECTS

000796 Adams, P. Evans. Department of Adult Psychiatry, Albert Einstein Medical Center, Philadelphia, PA **Drug- and alcohol-induced psychiatric syndromes.** Psychosomatics. 18(2):21-24, 1977.

Pharmacological treatment of alcohol and drug induced psychiatric syndromes is reviewed. Suggested treatment for acute alcohol withdrawal symptoms includes administration of chlordiazepoxide in doses as high as 50 to 100mg every 4 hours, 100mg thiamine twice daily, and haloperidol in cases with acute psychotic disturbance. Treatment of toxic psychosis associated with many street drugs, marijuana, and the amphetamines may be treated with diazepam. Extreme caution in treatment is advised, as often the patient has used multiple drugs: major life signs should be monitored, respiratory aids should be available, and in cases with coma intravenous glucose should be administered. Psychiatric and neurologic consultation may be advisable in some cases. Prescription drug interactions, especially antipsychotics plus tricyclics, resulting in psychosis or coma require a careful drug history for treatment. Haloperidol or fluphenazine are recommended for the treatment of the extremely agitated or aggressive patient. 7 references.

000797 Baumann, U.; Angst, J. Forschungsdirektion, Psychiatrische Universitatsklinik, Zurich, Switzerland **/AMP system: longitudinal course studies of psychopathologic and somatic symptoms. An empiric investigation of the problem of side-effects./** AMP-System: Verlaufsanalysen psychopathologischer und somatischer Symptome. Eine empirische Untersuchung zum Problem der Nebenwirkungen. Archiv fur Psychiatrie und Nervenkrankheiten (Berlin). 223(3):227-238, 1977.

The psychopathologic and somatic states of 681 psychiatric patients were investigated in longitudinal course studies within the scope of different psychopharmacological trials using the AMP rating system. Most psychological symptoms occurred less frequently during the course of treatment, whereas somatic symptoms were found to increase, which suggests side-effects from psychotropic drugs. Results show that the AMP system can be reduced by 45, and possibly 49 symptoms, because these symptoms are relatively rare and do not permit differentiation between diagnostic groups. 8 references. (Journal abstract modified)

000798 Beitman, Bernard D. Psychiatric Medication Clinic, GI-15, University of Washington School of Medicine, Seattle, WA 98195 **Diphenhydramine in the differential diagnosis of neuroleptic-induced oral-facial dyskinesia.** American Journal of Psychiatry. 134(6):695-696, 1977.

The utility of diphenhydramine administration in the differential diagnosis of neuroleptic induced oral/facial movement disorders is demonstrated in the case report of a 26-year-old schizophrenic woman who presented with a facial movement disorder while receiving treatment with trifluoperazine and trihexyphenidyl. Oral diphenhydramine administration was initiated to confirm the tentative diagnosis of tardive dyskinesia and to rule out early onset dystonia and dyskinesia. Diphenhydramine dramatically reduced both frequency and intensity of grimacing and a diagnosis of early onset dystonic/dyskinetic reaction was made without necessitating the interruption of trifluoperazine therapy. The importance of considering both syndromes in a differential diagnosis and the utility of diphenhydramine for screening is reiterated. 5 references.

000799 Bending, M. R.; Skacel, P. O. Medical Unit, Westminster Medical School, London SW1P 2AP, England **Rifampicin and methadone withdrawal.** Lancet (London). No. 8023:1211, 1977.

In a letter to the editor, a case of the mediation of symptoms of methadone withdrawal by the administration of rifampicin, which induces hepatic metabolism of methadone, is reported in a 24-year-old female drug addict being maintained on methadone. A study is cited in which 86 addicts on a methadone rehabilitation program were treated for tuberculosis with rifampicin. Seventy percent of those treated with rifampicin developed signs of methadone withdrawal, while none who were treated with nonrifampicin tuberculosis regimens developed withdrawal symptoms. In experiments in animals and in man, rifampicin exhibits the characteristics of microsomal enzyme induction. 11 references.

000800 Bergland, Mats; Nielsen, Soren; Risberg, Jarl. Dept. of Psychiatry, Univ. Hospital, S-22185 Lund, Sweden **Regional cerebral blood flow in a case of bromide psychosis.** Archiv fur Psychiatrie und Nervenkrankheiten (Berlin). 223(3):197-210, 1977.

Repeated measurements of regional cerebral blood flow using 133Xe inhalation are described in a case of bromide psychosis. The patient, a 58-year-old female, had used bromide on and off during the past 30 years, sometimes in excess, but had never developed psychotic symptoms. She was also a heavy drinker but had no indications of physical dependence on alcohol. At the first examination, when the serum bromide level was 45mmol/1, the cerebral blood flow was reduced to about one third of normal. The regional flow pattern was also abnormal, with low flow in the frontal and parieto/occipital regions. Hemodialysis was performed and overall improvement of the condition and successive normalization of the regional cerebral blood flow resulted. The pronounced decrease in cerebral blood flow, together with positive effects of hemodialysis, seems to indicate that bromide psychosis is of a toxic origin and not an abstinence phenomenon. 18 references. (Journal abstract modified)

000801 Biggs, John T.; Spiker, Duane G.; Petit, James M.; Ziegler, Vincent E. Department of Psychiatry, Washington University School of Medicine, 4940 Audubon Ave., St. Louis, MO 63110 **Tricyclic antidepressant overdose: incidence of symptoms.** Journal of the American Medical Association. 238(2):135-138, 1977.

Forty consecutively hospitalized patients who had overdosed primarily with a tricyclic antidepressant (TCA) were observed until discharge. The severity of the overdose was documented by serial measurements of plasma TCA levels. Nineteen of the patients became comatose, sixteen required supportive respiration, and two died. Individual symptoms in the 13 patients having plasma TCA levels greater than 1000ng/ml are shown. Plasma TCA measurements more reliably define patients who are at-risk for major medical complications following overdose than does the amount of drug ingested by history. In the absence of plasma measurements, a QRS duration of 100msec or more on a routine ECG within the first 24 hours defined all patients with major TCA overdoses. 20 references. (Journal abstract)

000802 Bobik, A.; McLean, a. J. Clinical Research Unit, Alfred Hospital, Commercial Rd., Prahran, Victoria 3181, Australia **Drug analysis in the overdosed patient: its application to clinical toxicology.** Medical Journal of Australia (Glebe). 1(11):367-369, 1977.

To evaluate the diagnostic utility of a drug assay service in the management of drug overdose patients, a study was made of 187 patients suffering from overdosage by means of clinical records and drug analysis. Drugs were detected in 152 patients. The groups of drugs most frequently involved in these patients were sedatives (51.7%), tricyclic antidepressants (21.8%) and analgesics (11.2%). This overall pattern differed little from that determined by clinical diagnosis. However, discrepancies between clinical diagnosis and laboratory analysis were found in 43 patients. A retrospective assessment was made from clinical records of the influence of drug assay results upon clinical management. Decisions as to the need for admission to hospital and decisions relating to the management of patients suffering from overdoses of analgesics and tricyclic antidepressants were aided by drug analysis. 14 references. (Author abstract)

000803 Bolter, Arthur. no address **Phencyclidine (PCP) abuse.** Western Journal of Medicine. 127(1):80, 1977.

Patterns of ingestion, reactions to ingestion, and therapy for ingestion of phencyclidine (PCP) are described. Despite its early negative reputation, PCP has become a major drug of abuse with a new generation of drug users. The effects vary with method and amount of administration; overdosage is much more likely with oral ingestion, since inhalation intoxication tends to be self-limiting. The most important signs to look for when diagnosing possible PCP intoxication are the presence of vertical and horizontal nystagmus, associated with hyptertension in a patient who is acutely confused or comatose, but without evidence of respiratory depression. 3 references.

000804 Brahen, Leonard S.; Capone, Thomas; Wiechert, Victoria; Desiderio, Dawn. Narcotic Antagonist Work-Release Program, Nassau County Medical Center, Building O, East Meadow, NY 11554 **Naltrexone and cyclazocine: a controlled treatment study.** Archives of General Psychiatry. 34(10):1181-1184, 1977.

The induction side-effects of cyclazocine and naltrexone were compared in double-blind placebo controlled studies involving 20 patients for each drug. Naltrexone was found to produce fewer side-effects than cyclazocine. Naltrexone side-effects fell to levels indistinguishable from those of placebo in the induction after placebo phase. In contrast, cyclazocine induction after placebo produced an even higher level of side-effects than found in its induction. In no case was naltrexone discontinued because of side-effects. On the other hand, three of 20 cyclazocine treated patients discontinued the drug because of distressing side-effects. No toxicity was noted with either agent. The controlled data supports the clinical impression that naltrexone produces fewer induction side-effects than cyclazocine. 17 references. (Journal abstract)

000805 Brewer, Colin. no address **Poisoning with antidepressants.** British Medical Journal (London). No. 6085:523, 1977.

In a letter to the editor, it is suggested that in light of the fact that the most commonly prescribed antidepressant drugs are toxic substances, the less toxic ones, mianserin and flupenthixol, should be preferred. Neither of these nontricyclic compounds have caused death when taken alone in overdose. It is concluded that the prescription of tricyclics and similar compounds should be considered as malpractice, except for specific indications, because safer and equally effectives drugs exist. 3 references.

000806 Bruce, A. M.; Smith, Hamilton. Dept. of Forensic Medicine, University of Glasgow, Glasgow, Scotland **The investigation of phenobarbitone, phenytoin and primidone in the death of epileptics.** Medicine, Science and the Law (Bristol). 17(3):195-199, 1977.

A survey of the levels (and the corresponding dose rates) of phenobarbitone (1.6mg/100ml), phenytoin (0.68mg/100ml) and primidone (1.1mg/100ml) in the blood of epileptic patients is described. These levels were compared with the concentrations found in the postmortem samples from people, both normal and epileptic, whose deaths involved these drugs. The results show that the death of an epileptic being treated with the above drugs should be investigated carefully before ascribing it to drug overdosage. 12 references. (Author abstract)

000807 Byrd, Gary J. Department of Psychiatry, Baylor College of Medicine, Houston, TX **Lithium carbonate and methyl-**

dopa: apparent interaction in man. Clinical Toxicology. 11(1):1-4, 1977.

The toxic interaction of lithium carbonate and methyldopa was studied following development of lithium toxicity in a patient receiving both drugs but who had relatively low serum levels of lithium. Subject was given lithium carbonate orally with methyldopa added on day 7. On day 9 symptoms of mild lithium toxicity developed including blurred vision, mental confusion, difficulty in organizing thoughts, disorientation, tremor of the hands and a mild disturbance in balance while walking. During the time that the toxicity was apparent, serum levels of lithium were elevated above those when lithium alone was administered but below those normally associated with lithium toxicity. Serum lithium levels decreased and symptoms disappeared within 36 hrs following discontinuance of methyldopa. It is suggested that physicians prescribing either or both of these drugs should be aware of the possible adverse interaction. 5 references.

000808 Byrd, Gary J. Department of Psychiatry, Baylor College of Medicine, 1200 Moursund Ave., Houston, TX 77030 **Acute organic brain syndrome associated with gentamicin therapy.** Journal of the American Medical Association. 238(1):53-54, 1977.

Two examples of mental disturbance caused by gentamicin sulfate therapy are presented in which the medical and psychiatric information rules out the probability of an idiosyncratic response to standard preoperative or postoperative medications, general anesthesia, surgical stress, exacerbation of a latent psychosis, or an effect associated with the nephrotoxicity of gentamicin. The psychotic episodes began after patients had received a total of 780mg and 1200mg of gentamicin, respectively; mental status returned to normal 48 to 72 hours after the gentamicin regimen was discontinued. Symptoms included visual hallucinations, mild confusion, disorientation to time, and visual illusions. It is concluded that physicians prescribing gentamicin should be alert for changes in mental function and that psychiatrists asked to examine patients with symptoms similar to those described should consider the possibility of acute organic brain syndrome and determine whether the patient is receiving gentamicin sulfate. 5 references.

000809 Carroll, Bernard J.; Curtis, George C.; Kokmen, Emre. Department of Neurology, University of Michigan Medical Center, Ann Arbor, MI 48109 **Paradoxical response to dopamine agonists in tardive dyskinesia.** American Journal of Psychiatry. 134(7):785-789, 1977.

The results of an extensive pharmacological analysis of a patient severely affected by tardive dyskinesia are reported. No drug treatment gave lasting clinical improvement. Several agents recently recommended for this condition, dimethylaminoethanol, clozapine, and thioridazine, failed to modify the dyskinesia. Reserpine caused a worsening of the symptoms. A paradoxical and unexpected improvement was observed with apomorphine injections and with low dosage oral L-dopa. It is suggested that these two drugs may have acted by stimulating presynaptic inhibitory dopamine receptors. 41 references. (Author abstract modified)

000810 Carter, J. Gary; Schmidt, R.; Carter, Pamela Ann. no address **Treating blurred vision associated with antipsychotic medication.** American Journal of Psychiatry. 134(8):941, 1977.

In a letter to the editor, the absence of research on the treatment of blurred vision associated with antipsychotic medication is decried, and initial success in treating the phenomenon with pilocarpine hydrochloride is reported. Hyperopia occurs in patients on antipsychotics because of the anticholinergic properties of these agents; this iatrogenic hyperopia causes the blurring of vision. Pilocarpine has proved to be a relatively safe drug, suitable for long-term use in patients with glaucoma without the high risk of cataract development associated with certain anticholinesterase agents.

000811 Casey, Daniel E. no address **Bibliography on tardive dyskinesia since CTB-TDN, Volume 2, No. 1.** Convulsive Therapy Bulletin. 2(2):29-30, 1977.

Literature on tardive dyskinesia which has been published since the preceding issue of Convulsive Therapy Bulletin with Tardive Dyskinesia Notes is listed. The bibliography is presented alphabetically according to the author's last name and by subject category. Each work is abstracted, and many are commented upon. 19 references.

000812 Chouinard, Guy; Annable, Lawrence. INRS-Sante, Hopital Louis-H Lafontaine, 7401 Hochelaga Street, Montreal, Quebec H1N 3M5, Canada **Phenothiazine-induced ECG abnormalities.** Archives of General Psychiatry. 34(8):951-954, 1977.

In an investigation of the effect of a glucose load on phenothiazine induced ECG abnormalities, 54 schizophrenic patients were randomly assigned to one of three treatments as follows: 1) placebo; 2) perphenazine 125mg/day; or 3) the combination of amitriptyline, 125mg/day, with perphenazine, 20mg/day. Medication was administered under double-blind conditions for 12 weeks, after which ECGs were taken following an overnight fast and again following a 600 calorie meal. Results show that among patients receiving perphenazine or amitriptyline/perphenazine, there was a statistically significant increase in repolarization abnormality after eating, whereas placebo treated patients incurred no such increases. It is suggested that the findings support the hypothesis that phenothiazine induced ECG changes may be caused or facilitated by the glucose load. Additionally, the incidence of increase in repolarization abnormality after the meal was higher among female patients than among male patients. It is concluded that the findings are of practical significance for readings of abnormality in the ECG of phenothiazine treated patients. 18 references. (Author abstract modified)

000813 Cleary, Michael F. 7350 East Stetson Drive, Scottsdale, AZ 85251 **Fluphenazine decanoate during pregnancy.** American Journal of Psychiatry. 134(7):815-816, 1977.

The use of fluphenazine decanoate throughout the pregnancy in a 32-year-old primiparous schizophrenic patient is described. Because of repeated psychotic episodes, fluphenazine was administered during her pregnancy in spite of possible side-effects on the fetus. The infant was healthy at birth. Minor extrapyramidal manifestations were noticed at four weeks after delivery, and the baby was treated successfully with diphenhydramine elixir. Subsequent examinations indicated that the infant remained healthy. 4 references.

000814 Cohen, Sydney. 13020 Sky Valley Road, Los Angeles, CA 90049 **/Phencyclidine hydrochloride: pharmacologic, acute, and chronic effects./** Angel dust. Journal of the American Medical Association. 238(6):515-516, 1977.

The pharmacologic, acute, and chronic effects of phencyclidine hydrochloride, also known as PCP or angel dust, abuse are reported. Angel dust can be readily manufactured and is a common substitute for less readily available

psychedelic drugs. It may be inhaled, smoked, ingested, or injected. Pharmacologic effects include sympathomimetic effects, dizziness, ataxia, dysarthria, and nystagmus. Psychological effects, probably the result of a defect in integration of sensory stimuli, give rise to loss of reality testing ability, dissolution of ego boundaries, and intellectual and emotional disorganization. Large doses may result in coma, convulsions, or death. Acute effects may include: disinhibition; toxic reaction psychosis; anxiety; and schizophreniform psychosis of a catatonic or paranoid type. Prolonged exposure to angel dust may result in chronic behavioral deviancy or organic brain dysfunction. 6 references.

000815 Covi, Lino; Lipman, Ronald S. Psychiatry Department, Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Diazepam induced hostility in depression. (Unpublished paper).** Rockville, MD, NIMH, 1977. 14 p.

In a paper presented at a meeting of the American Psychiatric Association in Toronto, a study designed to examine the occurrence, if any, of diazepam induced hostility in depressed subjects is presented. In this experiment, patients with nonpsychotic depression were given diazepam or a placebo over a period of several weeks. Collected data indicate that diazepam increases overt hostility in patients with high initial levels of hostile depression and in depressed subjects participating in group therapy situations. In these patients, the effects occurred early and tapered off after several weeks of drug treatment. However, slight increases in hostility occurred in many of the other subjects as well, indicating that hostility is a true drug effect of diazepam and not a paradoxical effect. 14 references.

000816 Crane, George E. 817 Valley Ave., Solana Beach, CA 92075 **The prevention of tardive dyskinesia.** American Journal of Psychiatry. 134(7):756-758, 1977.

The problems involved in preventing tardive dyskinesia by limiting the use of neuroleptic drugs are discussed. It is suggested that even the extensive publicity given the tardive dyskinesia has had little effect on excessive use of neuroleptics in psychiatric populations. It is argued that if current prescribing patterns are not drastically altered, significant numbers of patients will be afflicted. The risk of permanent neurological disorder might be minimized by monitoring side-effects and subsequently reducing drug doses in mental health facilities, but the difficulty in implementing such programs in facilities that rely heavily on chemotherapeutic techniques is emphasized. 8 references. (Author abstract modified)

000817 Crayton, John W.; Smith, Robert C.; Klass, David; Chang, Sidney; Ericksen, Stephen E. Department of Psychiatry, University of Chicago, 950 E. 59th Street, Chicago, IL 60637 **Electrophysiological (H-reflex) studies of patients with tardive dyskinesia.** American Journal of Psychiatry. 134(7):775-781, 1977.

The electrophysiological (H-reflex) recovery curves of 31 schizophrenic patients with tardive dyskinesia were studied as they responded to acute administrations of apomorphine, amphetamine, or physostigmine and then compared with the curves of chronic schizophrenic patients without tardive dyskinesia and normal volunteers. An unexpected finding was the absence of an H-reflex in 9 of 31 patients with tardive dyskinesia. A relationship between the severity of tardive dyskinesia and the value of the facilitatory peak Hx was discovered with patients having more severe symptoms also having significantly higher Hx values. Apomorphine, amphetamine, and physostigmine tended to reduce Hx values, with the physostigmine reduction in parallel with the time course of the reduction of tardive dyskinesia. It is suggested that the evidence indicates that a number of different abnormalities of neurotransmitter systems, including dopaminergic, cholinergic and others are involved in the development of tardive dyskinesia. 28 references. (Author abstract modified)

000818 Crews, Eugene L.; Carpenter, Arthur E. University of Alabama at Birmingham School of Medicine, Birmingham, AL 35294 **Lithium-induced aggravation of tardive dyskinesia.** American Journal of Psychiatry. 134(8):933, 1977.

A case report is presented in which administration of lithium carbonate seemed to substantially aggravate a patient's preexisting tardive dyskinesia. The course of events in this case indicates that lithium toxicity may be expressed as an aggravation of a tardive dyskinesia. This patient tolerated lithium without exaggeration of her movement disorder before a high serum level was reached. It is difficult to estimate the contribution of deanol to the final clinical state; lithium and deanol may be synergistic in the treatment of tardive dyskinesia or deanol may have a beneficial effect on dyskinetic movements that is not inhibited by therapeutic levels of lithium. 6 references.

000819 Crome, Peter; Newman, Belinda. New Cross Hospital Poisons Unit, London SE14, England **Poisoning with maprotiline and mianserin.** British Medical Journal (London). No. 6081:260, 1977.

In a letter to the editor, the experience of a hospital poisons unit with two newly introduced quadricyclic antidepressants, maprotiline and mianserin, is reported. Forty one cases of maprotiline poisoning and 20 cases of mianserin poisoning are outlined. It was concluded that maprotiline poisoning causes symptoms similar to those of tricyclic antidepressants while mianserin does not cause the more serious symptoms with the observed dosages. 2 references.

000820 Davis, Kenneth L.; Berger, Philip A.; Hollister, Leo E. Veterans Administration Hospital, 3801 Miranda Ave., Palo Alto, CA 94304 **Deanol in tardive dyskinesia.** American Journal of Psychiatry. 134(7):807, 1977.

The use of dimethylaminoethanole (deanol) in treating tardive dyskinesia of four patients is reported. In all of the cases deanol was not effective at the dosage (1600-2000mg/day) used. It is concluded that larger doses might be more effective and that further studies are needed. 8 references.

000821 Day, Rufus S., III; Dimattina, Michael. Chemistry Branch, DCCP, NCI, NIH, Bethesda, MD 20014 **Photodynamic action of chlorpromazine on adenovirus 5: repairable damage and single strand breaks.** Chemico-Biological Interactions (Amsterdam). 17(1):89-97, 1977.

To study the biological and physical effects of chlorpromazine plus light treatment on DNA, human adenovirus 5 was irradiated with near ultraviolet light in the presence of chlorpromazine-HCl in phosphate buffered saline. Chlorpromazine, a substituted phenothiazine, commonly used as a sedative, has been found to photosensitize the inactivation of human adenovirus to wavelengths of light between 330 and 390 nm. The slope of the inactivation curve is three fold greater when fibroblasts from people having xeroderma pigmentosum (XP) were used as viral hosts than when normal fibroblasts were used, showing that at least two-thirds of the damage produced in the virions is repairable by normal human fibroblasts. The phototreatment of chlorpromazine sensitized

virons also results in the production of DNA strand breaks, which correlate fairly well with the production of lethal viral damage as measured in XP fibroblasts. These findings suggest that the photosensitization of the skin observed in patients treated with chlorpromazine might be due to DNA damage. 30 references. (Author abstract modified)

000822 Donlon, Patrick T. University of California School of Medicine, Davis, CA 95616 **Medical screening of patients on maintenance neuroleptics.** Psychosomatics. 18(3):51-54, 1977.

In an assessment of the incidence of undiagnosed medical symptoms and disorders in chronic mentally ill patients on maintenance neuroleptics and supportive psychotherapy, 132 adult aftercare patients receiving ambulatory care at a community mental health center were studied. After administration of a screening questionnaire, psychiatric consultation, and routine physical examination, patients with suspected organic illness were referred to a specialist for appropriate diagnosis and care. Results indicate that routine laboratory studies for ambulatory patients on psychotropic drugs provide little useful information, even though the routine blood counts documented three cases of anemia and one case of leukocytosis induced by neuroleptics. It is concluded that although the study supports the general safety of neuroleptics, careful monitoring of patients to document indications for continuing administration of alteration of dosage is needed. 8 references.

000823 Donlon, Patrick T.; Tupin, Joe P. Department of Psychiatry, University of California at Davis, Sacramento, CA 95817 **Successful suicides with thioridazine and mesoridazine.** Archives of General Psychiatry. 34(8):955-957, 1977.

Case reports of five successful and one unsuccessful suicides from thioridazine and mesoridazine overdose are described and the clinical course and management of neuroleptic overdose is outlined. Cardiac arrhythmia was the apparent cause of death in the patients, with changes resulting from either direct cardiac toxicity, local anesthetic effect, peripheral vascular effect, or a combination of autonomic changes produced by anticholinergic and antiadrenergic pharmacologic actions. It is posited that in the unsuccessful case, reversible total heart block associated with thioridazine provides evidence that the deaths from overdose resulted from drug cardiotoxicity. It is concluded that death secondary to neuroleptic overdose is not as rare as assumed and that overdoses of these drugs are more lethal than have been assumed. 13 references. (Author abstract modified)

000824 Eadie, Mervyn J. no address **Tardive dyskinesia.** Medical Journal of Australia (Glebe). 1(19):682-683, 1977.

The cause, symptoms, and treatment of tardive dyskinesia, defined as abnormal involuntary movement, are discussed. It is emphasized that symptoms of tardive dyskinesia often appear after long exposure to neuroleptic agents, particularly drugs of the phenothiazine and butyrophenone classes. Conditions under which symptoms may appear, neuropathological mechanisms, and means of alleviation are outlined. It is concluded that the possibility of developing tardive dyskinesia in response to neuroleptic agents is an argument against the use of these agents for the management of mild chronic anxiety and tension. 4 references.

000825 Edwards, J. Guy. Knowle Hospital, Fareham, Hampshire, England **Unwanted effects of psychotropic drugs. I: some general considerations.** Practitioner (London). 218(1306):556-562, 1977.

The most common and serious adverse effects of psychotropic drugs are reviewed as to types of adverse reactions, predisposing factors, interactions between various psychotropic drugs, and placebo side effects. It is suggested that the incidence of reported unwanted effects in psychopharmacology vary with the demographic characteristics of the patient population, the medical and psychiatric conditions being treated, and the physicians' prescribing practices. It is concluded that the reporting of side-effects has in the past lead to important therapeutic discoveries. 21 references.

000826 Edwards, J. Guy. Knowle Hospital, Fareham, Hampshire PO17 5NA, England **Convulsive seizures and viloxazine.** British Medical Journal (London). No.6979:96-97, 1977.

An occurrence of convulsive seizures in a 50-year-old male being treated for depressive psychosis with viloxazine, a bicyclic antidepressant, is reported. On the sixth day of treatment with viloxazine (100mg three times daily), the patient reported feeling disoriented and complained of a headache. Within 45 minutes the patient had a typical grande-mal attack with generalized convulsions, followed by two additional seizures several hours later. Persecutory ideas lasted several days after the attacks. An EEG indicated only a mild nonspecific abnormality with generalized theta activity. No further seizures have occurred in the 4 years since the discontinuation of viloxazine. Although evidence is circumstancial, it is suggested that further research into the possible epileptogenic properties of viloxazine be undertaken. 6 references.

000827 Edwards, J. Guy. Knowle Hospital, Fareham, Hampshire, England **Unwanted effects of psychotropic drugs. III. -- drugs for depression.** Practitioner (London). 218(1308):862-873, 1977.

The antidepressants currently in use are listed, and the unwanted side-effects of the two most extensively used types, the tricyclic group and the monoamine oxidase inhibitors (MAOIs) are outlined. Tricyclic antidepressants and MAOIs may impair psychomotor, sensory, and cognitive performance, or they may activate a latent psychosis or produce a toxic confusional state. Neurological effects include precipitation of a grand mal seizure, headache, retrobulbar neuritis, and extraocular muscle paralysis. Both can produce a peripheral neuropathy, especially when given in large dosages. Both tricyclics and MAOIs have a range of anticholinergic effects similar to those produced by neuroleptics. Other side-effects include hematological, dermatological, cardiovascular, and gastrointestinal reactions. Both tricyclics and MAOIs are also responsible for various synergistic drug interactions ranging in severity from mild excitation to fatal hemorrhages.

000828 Edwards, J. Guy. Knowle Hospital, Fareham, Hampshire, England **Unwanted effects of psychotropic drugs: II. -- drugs for schizophrenia.** Practitioner (London). 218(1307):696-700, 1977.

The unwanted reactions to neuroleptics commonly used to treat schizophrenia, including butyrophenones, phenothiazines, and thioxanthine derivatives, are outlined. The psychiatric and behavioral effects of these drugs may include toxic confusional states and psychopathological reactions such as depression, excitement, 'paranoid' reactions, and, in rare instances, akinetic mutism. Occasionally, these drugs have epileptogenic properties causing convulsive seizures. The most troublesome and prevalent of all unwanted effects are the extrapyramidal reactions, including parkinsonism, akathisia, dystonic reactions, and tardive or persistent dyskinesia. Other unwanted but rarer effects can be autonomic, metabolic, haematological,

dermatological, cardiac, hepatic, or ophthalmic. Synergistic interactions at therapeutic dosages are also a possibility when neuroleptics are administered with other psychotropic agents.

000829 Edwards, J. Guy. Knowle Hospital, Fareham, Hampshire, England **Unwanted effects of psychotropic drugs: IV. -- drugs for anxiety.** Practitioner (London). 219(1309):117-121, 1977.

The side-effects of psychotropic drugs for the treatment of anxiety are discussed. The anxiolytic sedatives, or minor tranquilizers commonly used to treat anxiety are listed by type and name in a tabular format. Psychiatric, neurological, hematological, dermatological, and miscellaneous effects are described. The interactions of anxiolytic sedatives with other types of sedatives and the characteristics of recently developed beta-adrenoceptor blocking agents are examined.

000830 Edwards, J. Guy. University of Southampton Medical School, Southampton, England **Unwanted effects of psychotropic drugs. V. -- other drugs, treatment and prevention.** Practitioner (London). 219(1310):231-237, 1977.

Unwanted effects of psychotropic drugs (psychostimulants, psychodysleptics and lithium) are discussed, including abnormal psychic experiences in the cognitive and perceptual spheres. Treatment of these unwanted effects in the form of decreasing dosage or discontinuing use of the drug leads to disappearance of the effects in most cases. Caution is advised in drawing conclusions from the cause and effect relationships between the giving of a drug and the occurrence of unwanted effects. The need for more research on the effects of these drugs is emphasized. 22 references.

000831 Ewing, John A.; Mueller, Robert A.; Rouse, Beatrice A.; Silver, David. Center for Alcohol Studies, Medical School Bldg., University of North Carolina, Chapel Hill, NC 27514 **Low levels of dopamine beta-hydroxylase and psychosis.** American Journal of Psychiatry. 134(8):927-928, 1977.

A case report is presented of the occurrence of a psychotic reaction in an individual who was participating in a double-blind study of disulfiram (Antabuse), and the possible relationship between low levels of dopamine beta-hydroxylase (DBH) and psychosis is discussed. Disulfiram is known to be an inhibitor of DBH, and it was hypothesized that disulfiram could provoke a psychosis by blocking the production of norepinephrine from dopamine. The psychotic episode occurred in a subject who had concealed a recent 1 year illness diagnosed as schizophrenia; it took place after 3 weeks of disulfiram and 8 days of placebo treatment. That the subject had a markedly lower blood DBH level than other subjects leads to speculation that low reserves of DBH might have placed the patient at risk for a psychotic state. 8 references.

000832 Ficker, Friedemann; Felber, Werner. Neurologisch-Psychiatrische Klinik, Fetscherstr. 74, DDR-8019 Dresden, Germany **/Extrapyramidal side-effects of metoclopramide (Cerucal) used in combination with an antidepressant./** Metoclopramid (Cerucal) -- Nebenwirkung als extrapyramidale Storung bei Kombination mit einem Antidepressivum. Psychiatrie, Neurologie und medizinische Psychologie (Leipzig). 29(5):304-306, 1977.

Extrapyramidal side-effects of metoclopramide (Cerucal) given in combination with an antidepressant were observed in a clinical case. A depressed patient treated with clomipramine received metoclopramide to control upper gastric discomfort. Two hours after intake the patient showed pharyngoglossal spasms, asymmetry of the neck, hypertonicity of the facial musculature, and akathisia. The symptoms abated gradually 3 to 4 hours after withdrawal of metoclopramide. In combination with the thymoleptic drug, the antiemetic apparently increases psychotropic potency, since both drugs were given in small doses. Control of extrapyramidal side-effects calls for withdrawal of the implicated drug, intramuscular injection of caffeine, and slow intravenous infusion of biperiden lactate (Akineton). Application of anti-Parkinson drugs (Norakin, Antiparkin, Parkopan) is usually unnecessary. 12 references.

000833 Fischer, Vernon W.; Barner, Hendrick. St. Louis Univ. School of Medicine, St. Louis, MO **Cardiomyopathic findings associated with methylphenidate.** Journal of the American Medical Association. 238(14):1497, 1977.

The presence of structural alterations in the left ventricular myocardium of a patient who had been treated with the amphetamine congener methylphenidate hydrochloride for approximately 4 1/2 years is reported. It is posited that although the patient was exposed to a variety of drugs, methylphenidate should be considered as the incriminating factor since this agent is amphetamine related, and because the formation of lamellated bodies in mammalian tissues exposed to the amphetamine analogue chlorphentermine has been clearly documented. It is concluded that determination of this drug as the presumptive etiologic agent responsible for these alterations in the heart can be established by experimental animal procedures. 2 references.

000834 Fry, A. H.; Beard, A. W. Dept. of Psychological Medicine, Guy's Hospital, London, England **Iatrogenic extrapyramidal syndrome -- a cautionary tale.** Practitioner (London). 218(1308):874-876, 1977.

The case report of severe extrapyramidal syndrome accompanied by lethargy, drowsiness, and depression in a 49-year-old man is reported to emphasize the diagnostic difficulties that are encountered due to lack of awareness of phenothiazine medication. It is important that with any extrapyramidal syndrome, especially in the young, phenothiazines be considered early when making a differential diagnosis. Antiparkinsonian medication can effectively abolish many of the unwanted side-effects of the phenothiazines, including depression. 10 references.

000835 Gelenberg, Alan J.; Mandel, Michel R. Department of Psychiatry, Massachusetts General Hospital, Boston, MA 02114 **Catatonic reactions to high-potency neuroleptic drugs.** Archives of General Psychiatry. 34(8):947-950, 1977.

Case reports of eight patients who developed a syndrome marked by features of catatonia (including posturing, waxy flexibility, withdrawal and regression) and parkinsonism (including bradykinesia and rigidity) while receiving high-potency neuroleptic drugs, are described. The syndrome had a gradual onset, responded slowly to withdrawal of the neuroleptic or use of an anticholinergic agent, and responded rapidly to amantadine. It is concluded that the physician observing catatonic signs in a patient receiving neuroleptic medication should consider the possibility of drug induced catatonic syndrome before assuming a schizophrenic process. 35 references. (Author abstract modified)

000836 Gerlach, Jes. Department of Psychiatry, Rigshospitalet, 9, Blegdamsvej, DK-2100 Copenhagen, Denmark **The relationship between parkinsonism and tardive dyskinesia.** American Journal of Psychiatry. 134(7):781-784, 1977.

The relationship between parkinsonism and hyperkinesia was analyzed in psychiatric patients with tardive dyskinesia before and during treatment with alpha-methyl-p-tyrosine (AMPT), biperiden, and baclofen, and in patients with paralysis agitans and L-dopa induced hyperkinesia. AMPT and baclofen reduced the frequency of oral dyskinesia, increased the duration of each movement and did not affect the amplitude. Biperiden increased both the frequency and amplitude of oral dyskinesia. It is concluded that: 1) reduced dopaminergic activity may be the primary pathogenetic background for tardive dyskinesia; 2) dopaminergic hypersensitivity and/or cholinergic hypofunction is necessary before hyperkinesia breaks through; and 3) the neurotoxic effects of neuroleptics may be associated with age dependent changes in nigrostriatal regions representing oral innervation. 28 references. (Author abstract modified)

000837 Gillberg, Christopher. Department of Pediatrics, East Hospital, Goteborg, Sweden **"Floppy infant syndrome" and maternal diazepam.** Lancet (London). No. 8031:244, 1977.

A case of neonatal muscular hypertonia associated with excessive maternal intake of diazepam is reported. Muscular hypertonia, hypothermia, and suckling difficulties were observed on the day of birth of a fullterm normally delivered girl. Symptoms remained stable through the 14th day of life, and standard tests revealed no abnormalities. Upon finding the mother had been taking 2mg diazepam three times daily from the seventh month of pregnancy to delivery, serum diazepam and desmethyldiazepam levels in mother and child were assessed. Analysis indicated high serum diazepam levels and metabolite concentrations both in the child and the mother and her milk. Spontaneous recovery of the child occurred as the concentration of diazepam and its metabolite fell. The child was released on the 22nd day after birth. Hazards of diazepam use during pregnancy are briefly discussed, and it is suggested that oxazepam might be an effective replacement for diazepam during pregnancy. 7 references.

000838 Goldfrank, Lewis; Osborn, Harold. North Central Bronx Hospital, Bronx, NY **/The diagnosis and treatment of lithium toxicity./** 'Depressed.' Hospital Physician. 13(6):30-32, 42, 1977.

A case study is presented to illustrate the symptoms, differential diagnosis, and management of lithium toxicity. Various toxic etiologies present as affect psychosis must be critically differentiated from early alcoholic withdrawal, hypoglycemia, and cerebrovascular accident. Commonly used drugs which can produce manifestations of choreoathetoid movements with myoclonus are listed and discussed in relation to lithium toxicity, and the clinical use of lithium to treat manic and hypomanic states is described. It is suggested that toxic ingestion be considered in all similar cases in which the patient has a known psychiatric history. 7 references.

000839 Good, Michael I.; Shader, Richard I. West-Ros-Park Mental Health Center, 1842 Centre St., West Roxbury, MA 02132 **Behavioral toxicity and equivocal suicide associated with chloroquine and its derivatives.** American Journal of Psychiatry. 134(7):798-801, 1977.

The behavioral toxicity and lethality associated with the antimalarial agents chloroquine, hydroxychloroquine, and amodiaquine are reported. Therapeutic doses sometimes cause psychosis, delirium, personality change, and depression. Since moderately low overdoses of chloroquine can result in rapid death, such behavioral effects could lead to accidental or state dependent overdosage and death. It is recommended that the mental status of patients be evaluated before administration of chloroquine and related drugs. 43 references. (Author abstract modified)

000840 Gould, J. D. M.; Lingam, S. Royal Hospital for Sick Children, Glasgow G3 8SJ, Scotland **Hazards of intra-arterial diazepam.** British Medical Journal (London). No. 6082:298-299, 1977.

Two case reports, in which intraarterial injection of diazepam for the control of clonic seizures resulted in severe vascular or end organ damage, are presented. Injection of 3mg diazepam into the brachial artery of an 11-month-old male resulted in skin discoloration, oedema of the forearm and palm and intense swelling. Fortunately necrosis and swelling did not develop and complete healing occurred within 14 days. In the second case a male neonate, also, with clonic seizures, was administered 1mg diazepam injected into the umbilical arterial catheter. The child's legs became oedematous and cyanosed. Conditions persisted until the infant's death due to aspiration pneumonia 13 hours later. It is concluded that, despite animal studies indicating the safety of arterial administration of diazepam, these cases and two previous reports of extensive tissue necrosis in children following intraarterial injection of diazepam seriously question the safety of this procedure. 15 references.

000841 Grevert, Priscilla; Masover, Bonnie; Goldstein, Avram. Addiction Research Foundation, 701 Welch Rd., Palo Alto, CA 94304 **Failure of methadone and levomethadyl acetate (Levo-alpha-acetylmethadol, LAAM) maintenance to affect memory.** Archives of General Psychiatry. 34(7):849-853, 1977.

In a test of the previously reported memory deficits during long-term methadone administration, memory tests were administered to 30 patients taking methadone hydrochloride and 31 taking levomethadyl acetate (levo-alpha-acetylmethadol, LAAM) both prior to treatment and after one and three months of continuous treatment. A group of nonopiate using matched control subjects was administered the tests at similar intervals. No statistically significant difference in test performance was found among these groups at any of the three sessions. The methadone and control groups also did not differ significantly in the frequency of subjective reports of decreased memory function. Previous reports of memory deficits during long-term methadone administration may be a result of comparing methadone and control groups at a single point in time and assuming that prior to methadone maintenance the groups were equivalent. 15 references. (Author abstract modified)

000842 Grinspoon, Lester; Bakalar, James B. Harvard Medical School, Cambridge, MA **The amphetamines: medical uses and health hazards.** Psychiatric Annals. 7(8):6, 9, 12-18, 24, 1977.

The medical uses and health hazards of amphetamines are examined in regard to overprescription by psychiatrists and physicians. A history of the development and use of amphetamines is presented, beginning with the development of Benzedrine and the approval of the use of amphetamines in tablet form by the American Medical Association for the treatment of narcolepsy, parkinsonism, and certain depressive psychopathic conditions. The publicity given to this new "pep" pill by the national media is reviewed, as well as the way in which drug manufacturers expanded claims for the products through advertisements of its usefulness. It is posited that complementing the overprescription of amphetamines by physicians was the fact that the public could procure these

euphoriants in several ways. It is concluded that although obesity continues to be the condition for which legitimately obtained amphetamines are most casually and frequently prescribed, few conditions justify the prescribing of amphetamines, except for a small group suffering from narcolepsy or true childhood hyperkinesis. 32 references.

000843 Habibzadeh, Mohammad A.; Zeller, Nickolas H. Cardiovascular Section, Veterans Administration Hospital, 7th St. and Indian School Rd., Phoenix, AZ 85012 **Cardiac arrhythmia and hypopotassemia in association with lithium carbonate overdose.** Southern Medical Journal. 70(5):628-630, 1977.

A case report on a 30-year-old manic-depressive patient is seen to indicate that lithium carbonate, used in the treatment of manic-depressive psychosis, has a narrow therapeutic range, and that multiple, possibly fatal side-effects, including serious cardiac disorders, arrhythmias, and hypokalemia, may develop when the serum lithium concentration approaches or reaches toxic levels. The patient, who had no history of cardiovascular disease, had taken 120 tables (36gm) of lithium carbonate, but showed no acute distress on arrival at the hospital. After 12 hours, he developed sinus bradycardia and idioventricular rhythm, even though the serum lithium level had returned to a low therapeutic level. It is theorized that the lithium concentration in the cardiac tissue continued to increase even after the serum level was lowered. It is concluded that lithium, by imperfect substitution for other alkali cations, particularly sodium and potassium, and by alteration of the cellular microenvironment, affects vital enzymatic, hormonal, and metabolic systems, and that these effects could develop even at low therapeutic serum levels. 17 references.

000844 Hall, Steven C.; Ovassapian, Andranik. Department of Anesthesiology, Northwestern University School of Medicine, Chicago, IL **Apnea after intravenous diazepam therapy.** Journal of the American Medical Association. 238(10):1052, 1977.

Apnea after intravenous diazepam therapy was chronicled in a case study of a 56-year-old man scheduled for spermatocele repair under local anesthesia to indicate the conditions of a potentially fatal complication following diazepam administration. It was noted that apnea after intravenous diazepam administration has been reported previously, occuring mostly in patients who had also received barbiturates or other respiratory depressants. It is recommended that because of the possibility of apnea, caution should be used with the parenteral administration of diazepam and equipment for ventilatory support should be readily available.

000845 Haram, Kjell. School of Medicine, University of Bergen, Bergen, Norway **Floppy infant syndrome and maternal diazepam.** Lancet (London). 2(8038):612-613, 1977.

In a letter to the editor, the relationship between floppy infant syndrome and maternal use of high diazepam dosages is discussed. A case history is used to illustrate that normal development of an infant may not be impaired despite the use of diazepam as high as 30mg/day during pregnancy. The subject mother gave birth twice within 3 years while being maintained on daily doses of 15 to 30mg diazepam together with 300mg chlorprothixine during pregnancy. Follow-up of both children, several years after birth found them to be normally developed, physically and intellectually. It is suggested that further studies on the use and metabolism of diazepam in pregnancy are required before its use in pregnant women is discontinued.

000846 Heiman, Elliott M. Department of Psychiatry, University of Arizona College of Medicine, Tucson, AZ 85724 **Cardiac toxicity with thioridazine-tricyclic antidepressant combination.** Journal of Nervous and Mental Disease. 165(2):139-143, 1977.

The incidence of cardiac toxicity which may occur with the thioridazine/tricyclic antidepressant combination is discussed. Thioridazine/tricyclic antidepressant combination is frequently used in clinical practice because this combination has been effective in depressions which show both retarded and anxious features. Because both of these drugs have an adverse effect on cardiac repolarization, it is suggested that this may be a particularly hazardous combination. Two cases are presented illustrating life-threatening ventricular arrhythmia in patients who have ingested both thioridazine and tricyclic antidepressants. 19 references. (Author abstract modified)

000847 How, J.; Davidson, R. J. L. Haematology Unit, Department of Pathology, University of Aberdeen, Foresterhill, Aberdeen AB9 2ZD, Scotland **Chlorpromazine-induced haemolytic anaemia in anorexia nervosa.** Postgraduate Medical Journal (Oxford). 53(619):278-279, 1977.

Two patients with anorexia nervosa who developed progressive hemolytic anemia during chlorpromazine therapy are presented. In each case, withdrawal of the drug alone led to a prompt hematological response. Drug induced oxidant damage is proposed as being the underlying hemolytic mechanism. Minor degrees of drug induced hemolysis may not only remain unsuspected, but mild anemia may be wrongly attributed to the underlying anorexia nervosa. 7 references. (Author abstract)

000848 Isaac, P.; Mitchell, B.; Grahame-Smith, D. G. no address **Monoamine-oxidase inhibitors and caviar.** Lancet (London). No. 8042:816, 1977.

In a letter to the editor, a case study is presented of a woman who suffered an adverse reaction to monoamine oxidase (MAO) inhibitors after eating caviar. After eating 3 or 4 tablespoons of caviar a patient who had been taking "Parstelin" tablets (tranylcypromine 10mg trifluoperazine 1mg) suffered severe pain and profuse sweating. It was concluded that to the long list of foodstuffs containing amines which might produce hypertensive reactions in patients taking MAO inhibitors should be added Iranian and Russian caviar.

000849 Jeste, Dilip V.; Olgiati, Sandro G.; Ghali, Anwar Y. Laboratory of Clinical Psychopharmacology, NIMH, St. Elizabeths Hospital, Washington, DC 20032 **Masking of tardive dyskinesia with four times-a-day administration of chlorpromazine.** Diseases of the Nervous System. 38(9):755-758, 1977.

Two chronic schizophrenic outpatients with tardive dyskinesia were treated with chlorpromazine in two regimens -- once daily and four times daily -- using a crossover design. Two blind raters evaluated the severity of symptoms of tardive dyskinesia, pseudoparkinsonism and schizophrenia on rating scales every week during the 14 week trial period. Results showed that the intensity of dyskinesia was significantly lower, and that of pseudoparkinsonism higher (but not significantly) with four times daily than with once daily medication. Symptoms of schizophrenia did not vary in severity appreciably with the two frequencies of drug intake. It is suggested that multiple dose administration of a phenothiazine maintains a steady level of dopamine blockade throughout the day and thus masks the manifestations of tardive dyskinesia. 32 references. (Author abstract)

000850 Johnson, Anita. Public Citizen's Health Research Group, Washington, DC **The risks of sex hormones as drugs.** Women & Health. 2(1):8-11, 1977.

Women's health risks involved in the use of sex hormones as drugs -- birth control pills and especially postmenopausal estrogen -- are described. It is pointed out that birth control pills have been associated with uterine cancer, liver tumors, and blood clots. Postmenopausal estrogens also present dangers, as estrogens have been associated with breast and uterine cancer in numerous laboratory tests. The marketing of such hormones as Premarin is described; women of menopausal age are depicted as unhappy, and estrogen hormone pills are advocated as a panacea. The Food and Drug Administration and the medical profession are criticized for lack of attention to the dangers, and it is suggested that women's groups and health professionals launch a campaign to get postmenopausal women off Premarin type drugs. 33 references.

000851 Jones, Hardin B. University of California, Berkeley, CA 94720 **What the practicing physician should know about marijuana.** Police Chief. 44(5):66-69, 1977.

Arguments against the legalization of marijuana based on evidence of long-lasting metabolic effects are presented. Evidence is outlined for the retention of delta9-tetrahydrocannabinol (THC) in various body tissues, the possible causation of respiratory tract disease, and change in the shape of cerebral ventricles indicating effects on brain tissue. It is stated that a wide range of alterations in the personality structures of regular marihuana users can occur. 4 references.

000852 Jus, K.; Villenueve, C.; Desjardins, D.; Brunelle, R. Faculte de Medecine, Universite Laval, Quebec 10, Quebec, Canada **/Study of night sleep during long-term gradual reduction in neuroleptic therapy in chronic schizophrenics./** L'etude du sommeil de nuit pendant la reduction graduelle "a long terme" du traitement neuroleptique chez les schizophrenes chroniques. Vie Medicale (Quebec). 6(4):465-470, 1977.

Night sleep patterns of 11 chronic schizophrenics were studied for 22 weeks during a progressive reduction in neuroleptic therapy. It was found that a dose reduction over a period of 10 weeks to 25% of the prestudy dose provoked no change; between the 10th and the 20th weeks the drug reduction in nine cases brought changes in the sleep pattern and preceded a clinical aggravation by 2 to 4 days. It was concluded that a neuroleptic drug reduction during a 10 week period to 25% of the dose, on which patients have been stabilized for 3 years, can safely be recommended at least twice yearly to reduce the disadvantages and dangers of delayed side-effects. A drug reduction during a 5 month period seems less safe and necessitates constant psychiatric observation. 10 references.

000853 Kingston, Breda; Hawton, Keith. no address **Another paracetamol tragedy.** Nursing Times (London). 73(8):272, 1977.

The need for more stringent control over paracetamol, and improved public education on the effects of paracetamol overdose are discussed in the context of a case of fatal overdose by a 28-year-old woman. The patient had previously experienced brief periods of depression and it was following a severe depression that she, on impulse, ingested 50 paracetamol tablets. Following admission to the hospital, the patient denied wishing to die and scored in the low range on a suicide intent scale. The patient died 16 days following the overdose, of hepatic and renal failure with cerebral oedema, intraabdominal bleeding and aspiration pneumonia. Since its introduction into England and Wales in 1956, overdose due to paracetamol poisoning has greatly increased. Most patients chose the drug because of its ready availability and few were aware of the time lapse between ingestion and death. While paracetamol may have therapeutic advantages over aspirin, its toxicity requires the institution of measures to prevent fatal overdose. Possible measures include: 1) require prescription for the drug; 2) reduce the quantity of tablets in a container, or package tablets in blister packs; 3) incoporate an emetic in the tablets; and 4) place warnings about drug toxicity and the delayed effects on the container. It is suggested that a need for studying the overdose problem and developing educational strategies to decrease self-poisoning exists. 1 reference.

000854 Knapp, R.; Remen, D.; Linsenmeyer, G.; Boyd, E. Department of Anesthesiology, West Virginia University School of Medicine, Morgantown, WV 26506 **An evaluation of the cardiopulmonary safety and efficacy of triazolam, flurazepam, and placebo as oral hypnotic agents.** Clinical Pharmacology and Therapeutics. 21(1):107-108, 1977.

Triazolam, flurazepam, and placebo were compared in a double-blind study and the results were reported at the 78th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, Dallas, 1977. Triazolam in doses of 0.5mg and 1mg, given to 18 volunteer medical students, did not alter blood pressure, pulse rate, respiratory rate, minute and tidal volumes, carbon dioxide response, stroke volume, or cardiac output during an 8 hr period. Another double-blind study of 120 hospital patients the night before elective surgery compared 0.5mg and 1mg triazolam, 30mg flurazepam, and placebo with respect to falling asleep within 30 min, and sleeping for more than 6 hr. Both doses of triazolam were better than placebo and flurazepam. Flurazepam did not differ significantly from placebo.

000855 MacLennan, Bill. Southampton University, Southampton, England **Drugs and the old.** Health and Social Service Journal (London). 87(4556):1252, 1977.

The high incidence of drug side-effects in the elderly due to the poorer functioning of the body and the misuse of drugs by residential staff is discussed. The effects of aging on changes in drug responsiveness of an organ are discussed, noting that the brain, liver, and nervous system are more sensitive to drugs. It is suggested that pharmacies label bottles clearly to prevent overdoses, provide drugs in syrup form to those who can no longer swallow tablets and place tablets in individual dispensers to minimize the risks of side-effects.

000856 MacVicar, Katherine. Herrick Memorial Hospital, 2001 Dwight Way, Berkeley, CA 94705 **Abuse of antiparkinsonian drugs by psychiatric patients.** American Journal of Psychiatry. 134(7):809-811, 1977.

The abuse of antiparkinsonian drugs such as trihexyphenidyl and benztropine by psychiatric patients is discussed. Toxic reaction to antiparkinsonian drugs is subdivided into: 1) reactions to therapeutic dosages due to unusual sensitivity; and 2) reactions to overdoses. Deliberate abuse of antiparkinsonian medication for its euphoric and hallucinogenic effects has been reported rarely in the United States, because they are available only with a prescription. Case studies are cited which illustrate the potential hazards of antiparkinsonian medication in patients who have a history of drug abuse. 10 references.

000857 Majewski, F. Universitats-Kinderklinik, Rumelinstr. 23, D-7400 Tubingen, Germany **/Embryopathies induced by teratogenic agents./** Uber einige durch teratogene Noxen in-

duzierte Fehlbildungen. Monatsschrift fur Kinderheilkunde (Berlin). 125(6):609s620, 1977.

The teratogenic effects of certain forms of radiation, psychotropic drugs, chemicals, and drugs are reviewed. Among medicines, thalidomide, aminopterine, steroids, antiepileptic drugs, hydantoin derivatives, trimethadione, and warfarin have been implicated in embryopathy. Mercury and certain industrial solvents are also suspected of causing developmental defects. The rate of abnormality among children of chronic alcoholic mothers is about 50%, if drinking continues during pregnancy. The most common consequences for the child are low weight, stunted growth, microcephaly, hydrocephalus, cerebral defect, mental retardation, hyperexcitability, ataxia, heart defects, and genital malformations. Atypical palmar folds were seen in 81% of cases examined. Nicotine tends to reduce fetal weight and it increases perinatal mortality. Reports on the teratogenic effect of heroin differ; the most commonly mentioned defects are microcephaly, retarded growth, postnatal withdrawal symptoms (lasting up to 6 months), hyperactivity, irritability, and poor powers of concentration. A trend is evident in the incidence of embryopathies: a reduction in congenital malformations due to X-rays and medical preparations is being offset by an increase in teratogenesis due to drugs. 135 references.

000858 Maltbie, Allan A.; Cavenar, Jesse O., Jr. Veterans Administration Hospital, Durham, NC **Akathisia diagnosis: an objective test.** Psychosomatics. 18(3):36-39, 1977.

Cogwheeling (or jerking muscle resistance) is suggested as an objective physical finding helpful in establishing the diagnosis of the extrapyramidal disorder akathisia. It is asserted that the accentuation, or recruitment of cogwheel rigidity by the voluntary performance of alternating movements in the opposite wrists or elbow is a "hard," neurological confirmation of an otherwise clinical impression. To confirm the suspicion of drug induced side-effects in the patient with no history of movement disorder preceding antipsychotic drug treatment, it is necessary to determine whether a parkinsonian state is present. Three case reports are offered to support the finding that cogwheeling is a sufficiently reliable sign of extrapyramidal symptomatology to warrant the aggressive pursuit of appropriate antiparkinsonian drug management. 13 references.

000859 Manning, Edwin J.; Barron, Stephen; Goodell, Charles. Dent Neurological Institute, Buffalo, NY **Iatrogenic extrapyramidal disorders.** New York State Journal of Medicine. 77(7):1093-1095, 1977.

In a paper presented at a symposium on Iatrogenic Disorders of the Nervous System at the State University of New York at Buffalo, transient and sometimes permanent neuroleptic syndromes were discussed. The abnormal involuntary movements which result are related to alterations in the normal chemical and physiologic functions of the basal ganglia. Clinical features of the syndromes are described. Judicious use of these agents relating to dose and duration of treatment is advised. 11 references.

000860 Manoguerra, A. S.; Weaver, L. C. College of Pharmacy, University of Minnesota, Minneapolis, MN 55455 **Poisoning with tricyclic antidepressant drugs.** Clinical Toxicology. 10(2):149-158, 1977.

Precautions against possible poisoning by tricyclic antidepressant drugs are listed for use by prescribing physicians. It is stated that the tricyclic antidepressant drugs produce a serious and complex poisoning in patients who either accidentally or intentionally ingest them; however, as these drugs are useful in the treatment of severe depression, it is unlikely that the number of prescriptions for them will decrease. Prescribing physicians should, therefore, be thoroughly familiar with the toxicity of these drugs and the methods of treatment. When the drugs are prescribed for patients in households with small children or when the drugs are used for childhood nocturnal enuresis, parents should be made aware of the dangers of these drugs so that they can take the necessary precautions. In all cases, the minimum quantity possible should be prescribed and dispensed in an attempt to minimize the severity of any poisonings that may occur. (Journal abstract)

000861 McCabe, O. Lee. Dept. of Psychiatry, Univ. of Maryland School of Medicine, Baltimore, MD 21228 **Psychedelic drug crises: toxicity and therapeutics.** Journal of Psychedelic Drugs. 9(2):107-121, 1977.

A consolidation of and supplement to current knowledge about the manifestations and management of psychedelic drug crises is presented, especially aimed at the clinical practitioner who has limited knowledge of psychedelic substances. Various types of psychedelics and adverse reactions to them catalogued, and a typology of negative manifestations is given. These treatment modalities are reviewed: 1) use of antipsychotic drugs; 2) use of antianxiety agents; and 3) the "talk down" approach. It is cautioned that the professional who deals with psychedelics should be aware of residual problems and recognize the significance of the drug experience of the user and treat these drugs with the deference due a pharmacological agent which can produce the most bizarre encounters the human psyche can experience. 52 references.

000862 McCallum, R. W.; Ippoliti, A. F.; Cooney, C.; Sturdevant, R. A. L. Veterans Administration Wadsworth Hospital Center, Los Angeles, CA 90073 **A controlled trial of metoclopramide in symptomatic gastroesophageal reflux.** New England Journal of Medicine. 296(7):354-357, 1977.

The effects of metoclopramide were compared with those of placebo on symptoms of heartburn in 31 patients. Metoclopramide treated patients had significantly more symptomatic improvement than the control group. However, one patient had to withdraw from the study because of marked nervousness and anxiety, and three patients required a reduction in dosage because of anxiety (2 patients) and lethargy (1 patient). 38 references. (Author abstract modified)

000863 Medina, J. L.; Diamond, S. Hines VA Hospital, Hines, IL 60141 **Drug dependency in patients with chronic headaches.** Headache. 17:12-14, 1977.

To determine the relationship between drug dependency and chronic headache, 62 patients who took narcotics or common analgesics with barbiturates prescribed for headaches on a daily basis or four times a week for at least 6 months were studied. Of 38 patients who had been taking a combination of aspirin, phenacetin, caffeine, and butalbital for 0.5to 14 years, eight were considered dependent and two were considered abuser patients. Six were physically and psychically dependent and two were psychically addicted. No addiction and two abusers were found among 17 patients who had been taking codeine, alone or combined, for 1 to 35 years. No addiction and one abuser was found among six patients who had been taking propoxyphene alone or in combination for 0.5to 12 years. It is concluded that a danger of dependency and abuse is present in patients taking these drugs for long periods, and

therefore, symptomatic treatment of chronic headache with such medications is cautioned against.

000864 Messiha, F. S. Department of Pharmacology and Therapeutics, Texas Tech University School of Medicine, Lubbock, TX 79406 **Dopamine, the psyche, and extrapyramidal disorders.** Clinical Pharmacology and Therapeutics. 21(1):111, 1977.

A study of urinary excretion of dopamine and some of its major metabolites in patients with drug induced parkinsonism, hyperkinesia, and dyskinesia, and in healthy volunteers given LSD and cannabis sativa, was presented at the 78th Annual Meeting of the American Society for Clinical Pharmacology and Therapeutics, Dallas, 1977. Urinary dopamine and homovanillic acid were markedly decreased in patients with drug induced parkinsonism, while urinary dopamine was markedly increased in patients with motor hyperkinesia and dyskinesia. Monkeys with chlorpromazine induced dyskinesia showed an increase in concentration of dopamine and homovanillic acid in urine and in cerebrospinal fluid. Administration of LSD to normal volunteers resulted in a significant decrease in dopamine excretion during periods of altered behavior, while cannabis had little effect on mental behavior and urinary dopamine levels.

000865 Millar, W. Malcolm. 1 Duke St., Cromarty, Ross-shire 1V11 8TH, England **Deaths after overdoses of orphenadrine.** Lancet (London). No. 8037:566, 1977.

In a letter to the editor two reports of death due to an overdose of orphenadrine among patients at two Scottish mental hospitals are described to draw attention to the lethal effects of this drug, which is prescribed to control the parkinsonian effects of the phenothiazines. In both cases, because the drug was made available to the patients without precautions, both overdosed themselves as a suicidal gesture rather than as a determined effort to end their lives. The toxic effects are described as convulsions, caridac dysrhythmias, and death, similar to those of the tricyclics. Additionally, 11 patients suffering from the effects of large doses of orphenadrine who were admitted to the Edinburgh Royal Infirmary, are described. It is concluded that because orphenadrine may carry a greater risk than the drugs whose side-effects it is deemed to control, drugs such as haloperidol should be prescribed by psychiatrists with greater reserve because of their known parkinsonian effects, or that orphenadrine should be given only with the usual safeguards of a dangerous drug.

000866 Mims, Robert B.; Lee, Joel H. Home Health Services, USC School of Medicine, LAC/USC Medical Center, 1200 North State Street, Los Angeles, CA 90033 **Adverse effects of intravenous cannabis tea.** Journal of the National Medical Association. 69(7):491-495, 1977.

Adverse effects occurring in four youths 17 to 20 years old, after intravenous injection of an aqueous cannabis seed tea, which was prepared by boiling the seeds, are described. The effects were immediate and included nausea, vomiting, abdominal pain, watery diarrhea, chills, fever, hypovolemic shock, hypotension, and nonoligemic transitory renal failure. Other manifestations included persistent hypoglycemia, tachycardia, gastrointestinal bleeding, conjunctival hemorrhage, jaundice, splenomegaly, leucocytosis, myalgia, arthralgia, motor weakness, and prostration. Ischemia was noted on electrocardiogram. All manifestations appeared to reverse within weeks, but these effects had been potentially fatal. 20 references. (Author abstract)

000867 Mindham, R. H. S.; Lamb, Pauline; Bradley, Rachel. University Department of Psychiatry, Mapperley Hospital, Nottingham NG3 6AA, England **A comparison of piribedil, procyclidine and placebo in the control of phenothiazine-induced Parkinsonism.** British Journal of Psychiatry (London). 130:581-585, 1977.

A double-blind, crossover trial of the effectiveness of piribedil, procyclidine and placebo in the control of parkinsonism induced by fluphenazine decanoate was conducted in 16 cases of chronic schizophrenia. Procyclidine was shown to be more effective and piribedil less effective than the placebo. Piribedil produced a number of unpleasant effects, including headache, vomiting and malaise. 14 references. (Author abstract)

000868 Moccetti, Tiziano. Medizinische Fakultat der Universitat, Zurich, Switzerland /**Cardiotoxic drugs, with special attention to phenothiazines and imipramine derivatives.**/ Kardiotoxische Medikamente unter besonderer Berucksichtigung der Phenothiazine und Imipraminderivate. Bern, Hans Huber, 1977. 150 p.

A study of cardiotoxic side-effects of phenothiazines and imipramine derivatives is reported. The diagnosis of cardiac symptoms (insufficiency, arrhythmia, infarction) in young patients suggests the possibility of a toxic cause. The classic triad associated with acute poisoning due to cardiotoxic tricyclic thymoleptics includes coma, epileptic seizure, and arrhythmia. The latency period after intake of excessive imipramine ranges for 3 to 12 hours. Protracted treatment with phenothiazines, Daunomyzin and, possibly, ovulation inhibitors may lead to sudden cardiotoxic side-effects months after withdrawal. Phenothiazine poisoning is usually marked by cardiac insufficiency or cardiomyopathy; Aminorex has been implicated in right ventricular hypertrophy and pulmonary hypertension. The EKG is the most reliable diagnostic tool in toxic disorders of the myocardium. Periodic EKG recordings of patients on potentially hazardous drugs are indicated. Assessment of cardiotoxicity is complicated by interaction between drugs. The combination of MAO inhibitors and imipramine may induce critical or fatal hypertension, probably by mobilization of noradrenalin accumulations stored in the CNS during treatment with MAO blockers. Individual variables affecting drug action include genetic disposition, age, and state of health. 208 references.

000869 Nars, Per W.; Girard, Jurg. University Children's Hospital, CH-4005 Basel, Switzerland **Lithium carbonate intake during pregnancy leading to large goiter in a premature infant.** American Journal of Diseases of Children. 131(8):924-925, 1977.

Lithium Carbonate intake (750mg/day) by a 32-year-old pregnant woman with endogenous depression resulted in large goiter in a premature infant. Basal thyroid stimulating hormone level was high on the second day of life, T4 was normal as compared with normal values reported in the literature. Thyroid stimulating hormone response to thyrotropin releasing hormone was exaggerated in the patient as compared with euthyroid newborns. The mother showed a prolonged TSH response. With substitution therapy the thyroid enlargement slowly disappeared. Thyroid dysfunction in the newborn after lithium therapy of the mother during pregnancy seems to be a rare complication. It is suggested that lithium therapy be avoided in pregnant women. 13 references.

000870 Naylor, G. J.; McHarg, A. Royal Dundee Liff Hospital, Dundee, Scotland **Profound hypothermia on com-**

bined lithium carbonate and diazepam treatment. British Medical Journal (London). No. 6078(2):22, 1977.

A case is reported of profound hypothermia occurring on at least three occasions with combined lithium carbonate and diazepam treatment, but not occurring on either drug alone. A 38-year-old woman with profound mental retardation since birth, but no evidence of genetic or metabolic defect, was treated with lithium carbonate to alleviate aggressive behavior, the latter being added to a regimen of diazepam and perphenazine. In order to confirm the relationship between drug regimen and hypothermia, two 8 week double-blind trials were initiated. The duration of treatment required to produce hypothermia appears to have progressively shortened in the patient. 4 references.

000871 Neundorfer, B.; Valdivieso, T. Neurologische Klinik im Klinikum Mannheim, Theodor Kutzer Ufer, D-6800 Mannheim 1, Germany **/Parosmia and aromatic anosmia under L-Dopa therapy./** Parosmie und aromatische Anosmie unter L-Dopa-Therapie. Nervenarzt (Berlin). 48(5):283-284, 1977.

Parosmia and aromatic anosmia as side-effects of L-Dopa therapy were investigated. A 56-year-old male with primarily left-sided Parkinson syndrome was treated unsuccessfully with 125mg Madopar three times daily. Increase of dosage to 250mg and administration of Osnervan effected almost complete remission. Three months after prescription of the larger dose the patient noted lessening of taste sense and an olfactory sensation of "rotten, dirty, wet rags," accompanied by intense headache. The patient had discontinued Osnervan. At the time of admission the patient took Madopar and Effortil. Previously described Parkinson symptoms were present, and complete aromatic anosmia had set in without disturbing the sense of taste. Gradual reduction of Madopar and phasing in of an amantadine preparation relieved the anosmia. Since other causes could be ruled out, the symptoms are attributed to irritation of the first or second sensory nerves by L-Dopa. 7 references.

000872 Newsom, John. no address **On prescribing medications for recovering alcoholic patients.** Western Journal of Medicine. 127(1):77-78, 1977.

Difficulties inherent in prescribing medication for a patient who is trying to maintain abstinence from alcohol are discussed. Many medications used for sedation, sleep, pain, cough, intestinal symptoms, or depression increase the risk of creating a new habituation or addiction. Patients who have shown a dependency to alcohol frequently show a cross-dependence to any medication which has the capacity to elevate or depress the patient's mood. Preferred and nonpreferred pharmaceuticals for sedation, analgesia, cough suppression, nausea and vomiting, diarrhea, and depression are noted. 2 references.

000873 no author. no address **Headaches and coffee.** British Medical Journal (London). No. 6082:284, 1977.

Physiological and psychological concomitants of caffeine consumption are briefly reviewed. Caffeine is a cerebral vasoconstrictor which has been found to stimulate the central nervous system, increase respiration, affect smooth muscle, and cause diuresis. These effects are mediated by the inhibition phosphodiesterase, leading to an increase in cyclic AMP concentration. Excessive coffee consumption is capable of producing symptoms indistinguishable from anxiety neurosis: recurrent headache, mental irritability, cardiac arrhythmias, and gastrointestinal disturbances. Research suggests that coffee may be implicated in renal cancer, and myocardial infarction. Abrupt cessation of caffeine consumption may result in mild withdrawal symptoms. It is suggested that in view of the doubtful long-term safety of caffeine containing beverages, alternatives should be sought. 20 references.

000874 no author. no address **Adverse effects of lithium treatment.** British Medical Journal (London). No. 6083(2):346-347, 1977.

Reports in the research literature on adverse effects of lithium treatment of unipolar and bipolar manic depressive states are reviewed. The effects of lithium on the thyroid are described, and it is urged that treatment with lithium be preceded by an evaluation of thyroid function. Adverse effects of lithium on the heart seem to have occurred with plasma concentrations well within the recommended therapeutic range. Adverse effect of combined lithium haloperidol treatment and lithium induced nephrogenic diabetes insipidus with polydipsia and polyuria are discussed. Lithium crosses the placental barrier readily, and teratogenic effects are discussed. 24 references.

000875 no author. no address **Psychotropic drugs and intestinal paralysis.** Journal of the Japan Medical Association (Tokyo). 77(5):519, 1977.

A summary of the general conditions which usually surround intestinal paralysis (leading to shock and death) as a side-effect of some psychotropic drugs is presented. In most cases the patient is over 40 years old. The amount and length of administration of the drug does not appear to have much relation to the paralysis. Most patients complain of constipation just before onset of paralysis, and slight stomach aches, vomiting, abdominal swelling are common. When the affliction proceeds rapidly, shock and death follow within 2 or 3 days. Especially during long-term administration of psychotropic drugs, doctors are urged to watch for the above signs and discontinue administration of the drug at the first sign of them.

000876 no author. no address **Adverse drug reactions.** Medico-Legal Journal (London). 45(Part 2):31-32, 1977.

Procedures for determining adverse side-effects of therapeutic drugs are discussed, in response to the fact that approximately 40,000 drugs are available to the public, and adverse reactions to many of them are difficult to predict. The various phases of drug trials considered essential to public safety are described, and a statement on the legal liability for damages caused by adverse drug reactions is given. It is concluded that there are many difficulties and ambiguities which prevent the establishment of absolute safety of every potent drug.

000877 Okada, Fumihiko; Asano, Yu; Kase, Manabu; Arafu, Shibako; Naganuma, Masayuki; So, Daiji; Watanabe, Mitsuyo; Hiramatsu, Tsutomu; Onodera, Yukio. Department of Neuropsychiatry, Hokkaido University, Japan **The autonomous nervous functioning of patients who have experienced long-term use of psychoneural drugs (second report) -- effects on pupil functioning.** Psychiatria et Neurologia Japonica (Tokyo). 79(1):38, 1977.

In a report to the 49th Symposium of Hokkaido Neuropsychiatrists, held in July 1976 at Sapporo, Japan, pupil functioning was checked in 52 hospitalized and 19 outpatient schizophrenics who had been taking psychotropic drugs over long periods. Findings indicated that 5% eyedrop of cocaine did not cause mydriasis in all of the patients (36.5%) who did not show light reaction reflex. A 2.5% solution of metacocaine

produced dilation in all cases. Eleven of the 33 patients who showed a normal light reaction reflex reacted normally to the cocaine eyedrop, and four showed normal reaction to the metacocaine drop. It was concluded from the above that the parasympathetic nervous system was being intercepted at the preganglionic or postganglionic nervous level. It was suggested that the background of long-term use of psychotropic drugs was responsible for this condition.

000878 Okada, Fumihiko; Satomi, Ryuta. Health Administration Center, Hokkaido University, Japan **The autonomous nervous functioning of patients who have experienced long-term use of psychoneural drugs (first report).** Psychiatria et Neurologia Japonica (Tokyo). 79(1):37-38, 1977.

In a presentation to the 49th Symposium of Hokkaido Neuropsychiatrists held in July 1976 at Sapporo, Japan, the results of determining the effects of psychotropic drugs on the autonomous nervous system of 52 hospitalized and 28 inpatient schizophrenics is reported. The hospitalized patients were taking large doses of antischizophrenic drugs along with antiparkinsonian drugs in many cases. Most of these patients showed trembling of the fingers and a weakening of the finger muscles, while 19 showed loss of light response reflex, and 14 showed 20% and higher blood pressure readings in the sitting than in the standing positions; as many as 90% complained of constipation. Thus, long-term use of these drugs caused alpha-blocking in the sympathetic nervous system, and the parasympathetic nervous system effects of antiparkinsonian drugs were strengthened by muscarine, causing interception, and pandysautonomia like symptoms.

000879 Oliver, J. S.; Smith, Hamilton. Dept. of Forensic Medicine, University of Glasgow, Glasgow, Scotland **A case of fatal imipramine poisoning in an infant.** Medicine, Science and the Law (Bristol). 17(3):193-194, 1977.

The details of accidental imipramine poisoning in a child together with the analytical findings are reported. Thin layer chromatography and ultraviolet spectroscopy showed a drug level within the range of values found for adults, with the same trend of a high level in the liver (5.7mg/100g) and a low blood level; desmethylimipramine was also found in the liver. It is concluded that the analytical techniques used produced a rapid, easy confirmation that imipramine was present in the post-mortem material. 5 references.

000880 Oyama, Tsukasu; Aikawa, Hisashi; Haraoka, Yoichi; Manabe, Ryokichi; Ito, Naoki; Tsukamoto, Ryuzo. Department of Neuropsychiatry, Asahigawa Municipal Hospital, Japan **On psychological symptoms in bromide intoxication -- one case of high dose, long-term bromide intoxication which showed hallucination and delusion symptoms.** Psychiatria et Neurologia Japonica (Tokyo). 79(1):35-36, 1977.

In a report to the 49th Symposium of Hokkaido Neuropsychiatrists, held in July 1975 at Sapporo, Japan, a case was discussed in which a daily average of 50 to 60 brobalin capsules was consumed over a 6 month period and bromide intoxication resulted. Symptoms included double vision, tremens, ataxia, neurotic symptoms, and transitory hallucinations and delusions. At the time of hospitalization, bromide concentration in the blood was 83.6mg/dl from the bromide side chain in brobalin. Since no consciousness impairment was noted, this case fell into the transitory schizophrenia as described by Levin in 1947. Symptoms disappeared after 5 days of salt water administration to encourage kidney secretion of bromide.

000881 Park, J.; Proudfoot, A. T. Regional Poisoning Treatment Centre, Royal Infirmary, Edinburgh EH3 9YW, Scotland **Acute poisoning with maprotiline hydrochloride.** British Medical Journal (London). 6076:1573, 1977.

Six case reports of acute poisoning with maprotiline hydrochloride, a tetracyclic compound administered for depression, are reported, to emphasize concern over the increasing number of deaths from overdosage with tricyclic antidepressants. It is reported that comparisons between tricyclic antidepressant poisoning and maprotiline overdosage suggest that delirium and convulsions are more common with maprotiline, and could have an important influence on mortality. It is noted that in view of the anticholinergic nature of some of the clinical features, physostigmine salicylate might be valuable for desperately ill patients if used with caution. It is concluded that there are no obvious advantages in the use of maprotiline rather than other established antidepressives. 5 references.

000882 Perez, Guido O.; Oster, James R.; Sonneborn, Robert E.; Magrinat, Gaston; Vaamonde, Carlos A. Dialysis Unit (111C), Veterans Administration Hospital, 1201 N.W. 16th St., Miami, FL 33125 **Urinary carbon dioxide tension in lithium carbonate-treated patients.** Journal of Pharmacology and Experimental Therapeutics. 201(2):456-462, 1977.

In a study of renal acidification in 12 lithium carbonate treated psychiatric patients, urinary pCO2 response to oral sodium bicarbonate loading, a qualitative index of distal hydrogen ion secretion, was evaluated, and the results were compared with those obtained in 10 control subjects. The average maximal urine to arterial blood pCO2 difference (U/ApCO2) in the psychiatric patients was significantly lower than that of control subjects. Eight of these patients were also evaluated with ammonium chloride (NH4C) acid loading. Seven of eight patients had a minimal urine pH less than 5.30 after NH4C administration; only one of the seven had a normal U/ApCO2 after bicarbonate loading. Three patients were evaluated prior to treatment and after 2 weeks of lithium administration. Pretreatment U/ApCO2 values were normal. After therapy the values were lower in all three patients becoming definitely abnormal in two. The present investigation, in concert with previous animal studies, demonstrates that chronic lithium carbonate therapy in man may result in decreased U/ApCO2. 22 references. (Author abstract)

000883 Petit, James M.; Spiker, Duane G.; Ruwitch, Joseph F.; Ziegler, Vincent E.; Weiss, Alan N.; Biggs, John T. Washington University School of Medicine, 4940 Audubon Avenue, St. Louis, MO 63110 **Tricyclic antidepressant plasma levels and adverse effects after overdose.** Clinical Pharmacology and Therapeutics. 21(1):47-51, 1977.

Relationship between the plasma level of tricyclic drugs in 40 patients admitted to a hospital for drug overdose during an 18 month period and the major adverse effects of drug overdose was studied. A correlation was found between the amount of drug ingested according to the patient's history and the maximal plasma level attained. Maximal adverse effects, responses, and plasma levels occurred within 24 hr after drug ingestion. Plasma levels of tricyclic drugs were higher in patients who died, had cardiac arrest, required respiratory support, were unconscious, developed grand mal seizures, had a QRS greater than 100msec, had a ventricular rate greater than 120/min, had cardiac arrhythmias, and had bundle branch block. 20 references.

000884 Prenner, Bruce M. Department of Pediatrics, School of Medicine, University of California, San Diego, M-009, La Jolla, CA 92093 **Neonatal withdrawal syndrome associated with hydroxyzine hydrochloride.** American Journal of Diseases of Children. 131(5):529-530, 1977.

The first case report of a neonatal withdrawal syndrome associated with maternal usage of hydroxyzine hydrochloride to control intense itching due to severe eczema during pregnancy, is described. The infant's jitteriness, tachypnea, poor suck and feeding, irritability, clonic movements, and shrill cry are noted to be suggestive of the narcotic withdrawal syndrome. It is concluded that this observation suggests that the use of high doses of this agent in pregnancy should be avoided. 11 references. (Author abstract modified)

000885 Quader, S. E. Midland Nerve Hospital, Edgbaston, Birmingham B15 2NJ, England **Dysarthria: an unusual side effect of tricyclic antidepressants.** British Medical Journal (London). No.6079:97, 1977.

Two cases of patients developing dysarthria following the administration of a tricyclic antidepressant are reported. In the first case, the patient developed dysarthria on the third day of treatment for depression with dothiepin (25mg three times daily). In the second case, a depressed patient developed dysarthria on the fourth day of treatment following a dosage increase to 50mg three times daily. In both cases speech returned to normal following discontinuation of the medication. It is suggested that dysarthria may be produced by the direct anticholinergic effect of the tricyclic drug on the cerebellar connections and the striatum, leading to a selective uncoordination of articulation. 6 references.

000886 Ranek, L.; Andreasen, P. Buch. Division of Hepatology, Medical Department A., Rigshospitalet, DK-2100 Copenhagen, Denmark **Disulfiram hepatotoxicity.** British Medical Journal (London). No.6079:94-96, 1977.

Case reports of six individuals who developed liver disease 3 to 25 weeks after the initiation of aversive therapy for alcoholism utilizing disulfiram are presented. Presenting symptoms included anorexia, vomiting, abdominal cramps jaundice, and coma. In one of the six patients, hepatitis due to disulfiram was confirmed by a challenge test. The five remaining patients died, so evidence of disulfiram hepatotoxicity is circumstantial. However only one of these patients had a prior history of liver disease when disulfiram treatment was begun; and the histological features were not typical of viral hepatitis. The importance of reviewing drug intake in cases presenting with jaundice is emphasized; and further research on the possible association between disulfiram and liver disease is recommended. 13 references.

000887 Richlin, David M.; Saltzman, David B.; Wills, John. Department of Anesthesiology, Presbyterian Hospital, New York, NY **Necrotizing angiitis and hepatitis in an amphetamine abuser.** Delaware Medical Journal. 49(8):469-470, 476-477, 1977.

The case of a 23-year-old male, hospitalized for recurrent and worsening abdominal pain, weight loss, fever, and chills, following regular use of amphetamines is reported. Necrotizing angiitis was diagnosed angiographically. While the test for hepatitis B antigen was positive, serum complement, alkaline phosphatase, bilirubin, and SGOT were normal or only slightly elevated; and immunofluorescent staining of kidney tissue failed to reveal the presence of immune complexes. It is suggested that as evidence for hepatitis was slight in comparison to the severity of the illness, that the virus infection was merely a coincidental finding and that the extensive necrotizing angiitis was amphetamine induced. 6 references.

000888 Rubenstein, Allan E.; Wainapel, Stanley F. Department of Neurology, Mount Sinai School of Medicine, 100th St. and 5th Ave., New York, NY 10029 **Acute hypokalemic myopathy in alcoholism: a clinical entity.** Archives of Neurology. 34(9):553-555, 1977.

Two cases of acute hypokalemic myopathy representing another form of muscle involvement in alcoholism in which muscle pain, swelling, and tenderness are absent, are reported. In both patients progressive muscle weakness associated with potassium depletion resulted in marked improvement within 48 hours of intravenous potassium administration. Four previous reports of painless myopathy in alcoholics are reviewed, and it is suggested that the identification of acute hypokalemic myopathy as a clinical entity in alcoholism is justified. 23 references.

000889 Satya-Murti, Saty; Heiman, Terry; Martinez, Leonardo B. Albany Medical Center Hospital, Albany, NY 12208 **Possible propranolol-myotonin association.** New England Journal of Medicine. 297(4):223-224, 1977.

A letter to the editor concerning propranolol use in medical and neurologic practice is presented, calling specific attention to a possible neuromuscular complication associated with the drug. The warning is based on the medical description of a 57-year-old patient who developed muscle weakness accompanied by myotonia, which improved upon withdrawal of propranolol. The mechanism of action of propranolol is described in a study utilizing four female Sprague-Dawley rats administered 2,4-dichlorphenoxyacetic acid (2,4d). The myotonic state thus produced lasted for a least 12 hours. When propranolol was injected intraperitoneally into these animals at doses of up to 8mg/kg, no effect was observed on either clinical or electrical myotonia over the course of 6 hours. It is suggested that perhaps the long-term administration of propranolol exerts its effects on muscle or muscle membrane by decreasing high energy substrates and interfering with the utilization of free fatty acids by the muscle. 3 references.

000890 Schlagenhauff, Reinhold E. Department of Neurology, E. J. Meyer Memorial Hospital, Buffalo, NY **Iatrogenic encephalopathies.** New York State Journal of Medicine. 77(7):1095-1098, 1977.

In a paper presented at a symposium on Iatrogenic Disorders of the Nervous System held at the State University of New York at Buffalo, the common causes of iatrogenic encephalopathies were outlined with particular attention to those caused by smallpox or other vaccinations in the young and by larger doses of penicillin in the older population. The effects of lithium and certain analgesics on the brain are reviewed. It is suggested that the clinician should be aware of diphenylhydantoin (Dilantin) encephalopathy during the treatment of convulsive disorders, of dementia caused by long-term hemodialysis, and of pseudotumor cerebri initiated by steroids and contraceptives. 27 references.

000891 Sczupak, Christine A.; Smith, Bernard H. School of Pharmacy, State University of New York at Buffalo, Buffalo, NY **Pharmacologic perspective.** New York State Journal of Medicine. 77(7):1091-1092, 1977.

In a paper presented at a symposium on the Iatrogenic Disorders of the Nervous System at the State University of New

York at Buffalo, adverse drug reaction was reviewed with particular reference to drug induced neurologic disorders. Morbidity, mortality and the economic effects of adverse drug reaction are discussed along with the difficulty of obtaining complete and accurate information. Drug classes commonly involved in neurologic disorders are identified (antianxiety agents, antibiotics, anticonvulsants, antidepressants, antipsychotic drugs, antineoplastic agents, and sedative hypnotics). Guidelines for reducing drug reactions are proposed which include public information, better reporting techniques and conservative prescription policies. 11 references.

000892 Showalter, Craig V.; Thornton, William E. Substance Abuse Services, Inc., Chicago, IL **The increasing abuse of phencyclidine.** Illinois Medical Journal. 151(5):387-389, 1977.

The increasing abuse of the psychoactive drug phencyclidine (commonly known among illicit drug users as PCP) is detailed, and the effects, physical symptoms, and emergency treatment of phencyclidine intoxication are noted. It is posited that many cases of phencyclidine ingestion can be successfully managed with sensory isolation and the use of diazepam, while others require physical restraint, sedation, and behavioral observation. Medical complications such as seizures, coma, hypertension, respiratory failure, and death are frequently reported. It is concluded that prevalence of phencyclidine usage warrants its consideration in any suspected case of drug intoxication or acute delirium state.

000893 Siddiqui, J. H.; Vakassi, M. M.; Ghani, M. F. Department of Medicine, Washington University School of Medicine, St. Louis, MO 63104 **Cardiac effects of amitriptyline overdosage.** Current Therapeutic Research. 22(2):321-325, 1977.

The incidence and extent of cardiotoxic effects were investigated in physically healthy patients who had taken amitriptyline overdose. The patients who had taken other drugs along with amitriptyline were excluded from the study. Sinus tachycardia was the most common finding. A tendency toward hypotension was found in patients taking larger amounts of the drug. Electrocardiographic effects included conduction disturbances and arrhythmias. There was no consistent correlation between the amount of amitriptyline taken and the electrocardiographic changes. The majority of the patients recovered completely with supportive management. 13 references. (Author abstract)

000894 Smith, J. Sydney; Corbett, J. L. Neuropsychiatric Institute, P.O. Box 1, Rozelle, N.S.W. 2039, Australia **Prescribing phenothiazines.** Medical Journal of Australia (Glebe). 1(14):504-506, 1977.

Side-effects attending the long-term prescription of phenothiazines in adults and children are reviewed, and a criticism of an advertisement for Melleril (Sandoz, thioridazine) is presented. Tardive dyskinesia is a major and often severe and incapacitating side-effect of the phenothiazines which may be irreversible and is associated with brain damage. Prevalence reported in adults has ranged from .5% to 40% depending on population sampled. Tardive dyskinesia has also been reported when phenothiazines were used in the treatment of minor disorders, and in the treatment of children following withdrawal of medication. Exception is taken to advertising claims that Melleril is the drug of choice in the treatment of childhood hyperkinesis, mental retardation with behavior disorders, convulsions, anxiety in pediatric practice, and sleep disturbance and enuresis. It is suggested that such claims still require careful and strict substantiation in controlled double-blind studies. It is concluded that prescription of phenothiazines is warranted only in severe conditions which have been proven amenable to this form of treatment. 13 references.

000895 Smith, James M. Office of Clinical Research, Harlem Valley Psychiatric Center, Wingdale, NY **/Neuroleptic side-effects of chlorpromazine in psychopharmacological research./** no title. American Journal of Orthopsychiatry. 47(3):533-536, 1977.

In a letter to the editor commenting on Marholin and Phillips article, Methodological Issues in Psychopharmacological Research: Chlorpromazine, it is posited that the authors confuse neuroleptic side-effects in psychopharmacological studies, in particular the tardive dyskinesia syndrome. Further, it is suggested that this confusion results from classifying all motor disorders as part of the syndrome. The tardive dyskinesia syndrome is characterized, its prevalence and treatment resistance detailed, and the effect of antiparkinson medication is reviewed. In a reply, Marholin and Phillips acknowledge Smith's comments and stand by their original conclusions. 14 references.

000896 Smith, Robert C.; Tamminga, Carol A.; Haraszti, Joseph; Pandey, Ghanshyam N.; Davis, John M. Section of Behavioral Neurochemistry, Texas Research Institute of Mental Sciences, 1300 Moursund, Houston, TX 77030 **Effects of dopamine agonists in tardive dyskinesia.** American Journal of Psychiatry. 134(7):763-768, 1977.

A combined behavioral and neuroendocrinological strategy was used to investigate the relevance of abnormalities in the brain dopaminergic systems to the pathophysiology of tardive dyskinesia. The effects of apomorphine, a directly acting dopamine agonist, and d-amphetamine, an indirectly acting dopamine agonist were assessed in patients with tardive dyskinesia. Administration of d-amphetamine increased dyskinetic movements in most patients with tardive dyskinesia, a finding consistent with the dopaminergic hypothesis. Contrary to predictions based on animal models, apomorphine did not increase dyskinetic movements in these patients but instead substantially reduced dyskinesia in some patients. Patients with tardive dyskinesia did not have a greater drop in serum prolactin or a greater rise in serum growth hormone after apomorphine than normal or chronic schizophrenic subjects without tardive dyskinesia. 32 references. (Author abstract modified)

000897 Staak, M.; Gottwald, K.; Mallach, H.-J.; Schubring, G. Nagelestrasse 5, D-7400, Tubingen, Germany **/Pharmacological investigations concerning combination effects of alcohol and oxazepam in the reactivity pattern./** Pharmakopsychologische Untersuchungen uber Kombinationswirkungen von Alkohol und Oxazepam auf das Reaktionsverhalten. II. Mitteilung: Subjektive Befindlichkeit und Reaktionsverhalten. International Journal of Clinical Pharmacology and Biopharmacy (Munchen). 15(5):234-244, 1977.

An investigation of the combined effects of alcohol and oxazepam was conducted. In addition to a sedative effect, the interaction between the two drugs produced dysphoric changes of mood and related significant alterations of polarity profiles. The changes in performance and the alterations of polarity profiles could be correlated with the blood levels of alcohol and oxazepam. 13 references. (Author abstract modified)

000898 Stein, Richard S.; Beaman, Colleen; Ali, Mohammed Y.; Hansen, Richard; Jenkins, David D.; Jume'an, Hani, G. Section of Hematology, Vanderbilt University Hospital, Nashville, TN 37232 **Lithium carbonate attenuation of chemotherapy-**

induced neutropenia. New England Journal of Medicine. 297(8):430-431, 1977.

As lithium administration in psychotic patients is associated with leukocytosis, lithium carbonate was administered to 13 patients to determine its ability to affect the neutropenia associated with cancer chemotherapy. Mean baseline granulocyte counts and the projected chemotherapy dose were not significantly different in chemotherapy cycles given with or without lithium; however, the mean granulocyte nadir was significantly higher in the chemotherapy plus lithium cycles, suggesting that lithium might allow chemotherapy doses to be escalated toward optimal levels. It is suggested that increase in the total unbound vitamin B12 binding capacity may increase production of granulocytes from the bone marrow or marginated pool to the circulating granulocyte pool. 11 references.

000899 Streltzer, Jon; Leigh, Hoyle. University of Hawaii School of Medicine, Honolulu, HI 96822 **Case report: amphetamine abstinence psychosis -- does it exist?** Psychiatric Opinion. 14(1):47-51, 1977.

The case of a 22 year old male who developed a suspected amphetamine abstinence psychosis is described. The patient's course was consistent with descriptions of amphetamine abstinence psychosis. Review of the literature, however, revealed two distinct schools of thought: one view asserts the existence of an amphetamine abstinence psychosis, while the other denies it. It is suggested that in view of the described case, psychiatric consultants should consider the possibility that amphetamine abstinence plays a role in unexplained psychotic episodes in hospitalized patients. 19 references. (Author abstract modified)

000900 Sulkowski, Adam; Vachon, Louis. Division of Psychiatry, Boston University School of Medicine, 720 Harrison Avenue, Boston, MA 02118 **Side effects of simultaneous alcohol and marijuana use.** American Journal of Psychiatry. 134(6):691-692, 1977.

To determine the effects of simultaneous alcohol and marihuana use, 7 healthy male volunteers 20 to 29 years old with self-reported previous history of combined alcohol/marihuana use were administered alcohol plus placebo, marihuana plus placebo or marihuana plus alcohol in a series of studies. Four of the seven subjects experienced nausea, vomiting, autonomic nervous system lability, behavioral impairment and psychological distress following simultaneous use of alcohol and marihuana. A decreased dosage in a further study did not result in any ill effects. It is suggested that although this syndrome is self-limiting it could prove dangerous to individuals with cardiac or central nervous system disorders. 7 references.

000901 Sverd, Jeffrey; Hurwic, Maria J.; David, Oliver; Winsberg, Bertrand G. New York State Dept. of Mental Hygiene, Div. of Child Psychiatry, Downstate Medical Center, Brooklyn, NY 11203 **Hypersensitivity to methylphenidate and dextroamphetamine: a report of two cases.** Pediatrics. 59(1):115-116, 1977.

The cases of two children who were treated with methylphenidate for hyperkinetic behavior disorders and who developed consequent allergic manifestations are presented. The cases involve a 6-year-old and a 9-year-old boy, the first of whom developed angioneurotic edema after administration of methylphenidate. When the second patient was placed on dextroamphetamine, he also developed urticaria. These allergic reactions were treated by the discontinuation of the drug therapy and, in the case of the 6-year-old, by the administration of imipramine.

000902 Swett, Chester, Jr. McLean Hospital, Belmont, MA **Side effects of chlorpromazine in relation to cigarette smoking.** Psychopharmacology Bulletin. 13(1):57-58, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, a study of the relationship between cigarette smoking and various side effects of oral chlorpromazine (CPZ) in 515 patients is presented. The incidences of hypotension and drowsiness attributed to CP were highest in the nonsmokers, intermediate in the light to moderate smokers, and least in the heavy smokers. Other variables contributing to the incidence of hypotension included CP dosage and previous diastolic blood pressure. Drowsiness was also more likely to occur in patients receiving higher doses. 8 references.

000903 Swett, Chester, Jr.; Cole, Jonathan O.; Shapiro, Samuel; Slone, Dennis. McLean Hospital, 115 Mill St., Belmont, MA 02178 **Extrapyramidal side effects in chlorpromazine recipients.** Archives of General Psychiatry. 34(8):942-943, 1977.

In an investigation of the emergence of extrapyramidal symptoms (EPS) in psychotropic drug recipients, the frequency of EPS attributed to chlorpromazine among 86 psychiatric inpatients who received benztropine for the prevention of EPS (9.3%) was found to be similar to that of the 568 patients who received chlorpromazine alone (10.6%). It is concluded that the data indicate that the prophylactic use of benztropine has no effect in reducing the rate of EPS in hospitalized patients receiving chlorpromazine. 7 references. (Author abstract modified)

000904 Tamminga, Carol A.; Smith, Robert C.; Ericksen, Stephen E.; Chang, Sidney; Davis, John M. Department of Psychiatry, University of Chicago, 950 E. 59th Street, Chicago, IL 60637 **Cholinergic influences in tardive dyskinesia.** American Journal of Psychiatry. 134(7):769-774, 1977.

Placebo controlled double-blind studies of cholinomimetic agents, physostigmine, choline, and deanol were conducted using 12 patients with tardive dyskinesia to examine the previously reported therapeutic effect of these compounds. Physostigmine and choline both had a positive effect but it is suggested that the interpretation of these results is not entirely clear as the sedative effect of physostigmine may nonspecifically reduce the intensity of dyskinetic symptoms. Deanol was found to be ineffective in this group of patients. It is suggested, however, that a number of methodilogical artifacts may be responsible for introducing limitations into the interpretations of the deanol results. 25 references. (Author abstract modified)

000905 Toone, B. K.; Fenton, G. W. Maudsley Hospital, Denmark Hill, London SE5 8AZ, England **Epileptic seizures induced by psychotropic drugs.** Psychological Medicine (London). 7(2):265-270, 1977.

The connection between psychotropic drug induced epileptic seizures and biographical variables was investigated. On the basis of information abstracted from case histories, 41 patients who had experienced epileptic seizures thought to be due either to treatment with psychiatric drugs or to withdrawal from sedative drugs were compared with a control group of patients. Those who had experienced seizures were more com-

monly first born and had a history of postnatal brain damage. During the week preceding the seizure there had been a marked increase in drug prescribing. An analysis of individual drugs suggested that chlorpromazine in particular and diazepam to a lesser extent were especially culpable. The duration of drug prescribing was not important. 12 references. (Journal abstract modified)

000906 Ueno, Takeji; Miyagishi, Tsutomu; Takahata, Naohiko; Fujieda, Toshinori. Department of Psychiatry and Neurology, Hokkaido University School of Medicine, Sapporo, Japan **Electron microscopic studies on the cerebral lesions of rats in experimental chronic disulfiram poisoning.** Acta Neuropathologica (Berlin). 38(3):221-224, 1977.

Following chronic administration of disulfiram to rats, changes of the brain were examined electron microscopically. Pathological findings were observed in the nerve cells of the cerebral cortex and hypothalamus at later stage, and synaptic changes in the hypothalamus from initial stage. On the other hand, changes of myelinated fibers, neuroglias and capillaries were very slight. It was considered that neurons were affected more predominantly than other neuronal elements by the cytotoxic action of the drug, and that the synaptic changes of the hypothalamus might reveal chronic disturbance of noradrenergic transmission by inhibition of dopamine-beta-hydroxylase. These ultrastructural findings might relate to the pathogenic mechanism of the disulfiram psychosis. 16 references. (Author abstract)

000907 Ward, Amanda G.; Rawlins, M. D. Whickham Health Center, Whickham, Newcastle upon Tyne, England **Drug treatment in the elderly.** British Medical Journal (London). No. 6080:171, 1977.

A case history of a 68-year-old woman who developed signs of physical decline upon beginning to take benzhexol and nitrazepam is described. The woman had also been receiving medication for asthma and osteoarthrosis for 15 years. After starting with the new drugs she became confused, disoriented, and sometimes hallucinated. Since some elderly patients respond adversely to drugs due to the decline of certain routes of drug elimination and the increased sensitivity of target organs, the case was carefully reviewed to see if the patient was suffering from pharmacological summation. A trial withdrawal was initiated for 48 hours, and the patient showed immediate signs of improvement. The conclusion is made that drug treatment especially in the elderly, must be institued with extreme care and in small initial dosages.

000908 Waring, E. M. Victoria Hospital, London, Ontario, Canada **Unusual therapeutic effect of amitriptyline.** Canadian Medical Association Journal (Ottawa). 117(1):21, 1977.

In a letter to the editor, an unusual therapeutic effect of amitriptyline treatment in two patients, a man and a woman in their early 50's, who were referred for depressive symptoms, is reported. It is noted that 75mg of amitriptyline at bedtime resulted in dizziness, tachycardia and weakness, as well as fear of losing control and an overwhelming hatred for a spouse. The patients were free of depressive symptoms after 2 weeks and had insight into the feelings underlying their depressions. Their clinical improvement was maintained. The improvement is attributed to the insights into their aggression that they acquired after the first dose of amitriptyline. A request is made for reports of similar clinical experience with this toxic effect.

000909 Warner, Allan M.; Pierozynski, George. 5901 East Seventh Street, Long Beach, CA 90822 **Pseudocatatonia associated with abuse of amphetamine and cannabis.** Postgraduate Medicine. 61(1):275-277, 1977.

A case report is given of a 27-year-old male university student who developed a catatonia like state with negativism, tachycardia, hypertension, and leukocytosis. About 3 hr after admission, the patient behaved wildly, but 2 hr later he recognized his surroundings and talked intelligibly with the staff. After another 4 hr the patient was started on chlorpromazine, 50mg orally every 4 hours. The patient had been using amphetamines for 3 years. Shortly before the present episode, he began taking larger doses of amphetamine and started smoking hashish. Vital signs and laboratory tests returned to normal during the following 9 days. The pseudocatatonia was attributed to amphetamine abuse. 10 references.

000910 Weinberger, Daniel R.; Kelly, Martin J. no address **Catatonia and malignant syndrome: a possible complication of neuroleptic administration. Report of a case involving haloperidol.** Journal of Nervous and Mental Disease. 165(4):263-268, 1977.

An unusual, acute extrapyramidal reaction, which resulted from treatment with haloperidol and which was unresponsive to standard anticholinergic treatment and indistinguishable on clinical grounds from acute catatonia, is described. Because the etiology of this reaction was not appreciated, progressive, life-threatening physiological deterioration ensued accompanied by unremitting neuromuscular symptoms, a clinical picture resembling both lethal catatonia and the rare neuroleptic malignant syndrome. The literature on these conditions is reviewed and various problems in differential diagnosis are discussed. It is proposed that some cases of the neuroleptic malignant syndrome and perhaps lethal catatonia may represent the evolution of severe extrapyramidal reactions. 28 references. (Author abstract)

000911 Wellby, M.; Gabrynowicz, J.; Alexander, C. B. J.; Gaa'l, C. L.; Jadhav, R. Alcohol and Drug Addicts Treatment Board, 3/240 Currie Street, Adelaide, S.A. 5000, Australia **Addiction to diazepam.** Medical Journal of Australia (Glebe). 1(23):868, 1977.

The increase in the number of patients addicted to diazepam is discussed. It is suggested that frequent prescription for a number of ailments may be the cause for this increase. Diazepam withdrawal symptoms are protean and continue for many months after the medication has been stopped.

000912 Ziegler, Vincent E.; Co, Bun Tee; Biggs, John T. Department of Psychiatry, Washington University School of Medicine, 4940 Audubon Ave., St. Louis, MO 63110 **Electrocardiographic findings in patients undergoing amitriptyline treatment.** Diseases of the Nervous System. 38(9):697-699, 1977.

In a study of electrocardiographic findings in patients undergoing amitriptyline treatment, 15 depressed patients were treated with amitriptyline in a dosage ranging from 75mg to 200mg/day for a minimum of three weeks, two of which were at a fixed dosage. Plasma samples were drawn 12 to 16 hours after the bedtime dose of medication for determination of amitriptyline and its metabolite nortriptyline. Electrocardiograms were taken prior to treatment and after three weeks of drug treatment. The only abnormality noted prior to treatment was bradycardia in one patient. After treatment, two patients exhibited nonspecific T-wave abnormalities. Otherwise, the

electrocardiograms were unremarkable. A significant increase in heartrate was noted. The mean increase in rate was sixteen beats per minute. Those patients having a rate change greater than sixteen beats per minute had significantly higher amitriptyline levels and total tricyclic antidepressant levels than those patients having a mean rate increase less than sixteen. While tricyclic antidepressants can produce multiple cardiac effects, the risk of cardiac morbidity and mortality is relatively low in patients undergoing tricyclic antidepressant treatment with moderate dosages. 15 references. (Author abstract modified)

16 METHODS DEVELOPMENT

000913 Abt, K. Fachbereich Humanmedizin, J. W. Goethe-Universitat, Theodor-Stern-Kai 7, D-6000 Frankfurt am Main 70, Germany **/Quantification and statistical analysis of ordinal scale data in psychiatry./** Quantifizierung und statistische Auswertung von Ordinalskalendaten in der Psychiatrie. Pharmakopsychiatrie Neuro-Psychopharmakologie (Stuttgart). 10(3):193-200, 1977.

The validity of scores assigned to symptom severity in statistical analysis of psychiatric data was tested. It is concluded that the designations free of symptoms, mild symptoms, medium symptoms, or pronounced symptoms, with concomitant weighting as zero, 1, 2, and 3 do not constitute measured intervals on a quantitative scale. Statistical manipulations of these scores are not justified. Such ordinals can be used only in nonparametric or nondistributive methods such as permutation tests, rank tests, and contingency tables. These limitations will affect the planning phase of psychotropic drug trials. At best, single element or restricted multiple element classification is permitted, but covariables may not be included. The RIDIT method, in which every patient in the group is assigned a score relative to an identified distribution, contains arbitrary elements and is similarly unsuited to parametric analysis. A valid approach is offered by audiovisual techniques of observation and symptom quantification. The availability of multiple rater scores injects real quantities into the method; a formula of relative frequency reduces these scores to values which are independent of ordinal scale intervals. It is suggested a team of 15 to 20 raters is large enough to satisfy distribution requirements. 5 references.

000914 Anderson, Dwane; Lydic, Ralph. Department of Biomedical Engineering and Computer Medicine, Texas Tech University, School of Medicine, Lubbock, TX 79409 **Ratio data and the quantification of drug effects.** Biobehavioral Reviews. 1(1):55-57, 1977.

Using data from a pharmacological experiment, comparisons were made between analysis of data in ratio form and analysis of data where the denominator variable is taken as a concomitant variable. The results indicate that analyses using ratios decrease the sensitivity of the statistical test. Alternatives to the use of ratios are discussed. The statistical analysis of ratio data is seen as a potential methodological problem for drug research that may be physiologically biochemically, or behaviorally oriented. 8 references. (Author abstract modified)

000915 Baumann, U.; Seidenstucker, G. Inst. Psych. Christian-Albrechts-Universitat, Olshausenstr. 40/60, D-2300 Kiel, Germany **/Taxonomy and evaluation of psychological test methods in psychotropic drug trials./** Zur Taxonomie und Bewertung psychologischer Untersuchungsverfahren bei Psychopharmakaprufungen. Pharmakopsychiatrie/Neuro-Psychopharmakologie (Stuttgart). 10(3):165-175, 1977.

The taxonomy of psychological tests applied at different levels in the evaluation of psychotropic drug trials is reviewed. Psychological test methods are preferred to other instruments in assessment of drug trials because of their statistical validity, uncomplicated employment, and ease of administration. To avoid application of inappropriate instruments, tests are to be differentiated according to: 1) purpose; 2) status or process disclosure; 3) orientation as to norm or criterion; 4) need to establish scores or inventories; and 5) diagnostic or metric interest of the examiner. Modeling is required in the case of process diagnosis, criterion oriented diagnosis, decision making aids, and inventory application. Crossover techniques involving several levels of measurement require careful definition of data sources, concordances, and synchronous events. However, redundance of levels in the selection of parallel patient groups prevents spurious confirmation should some reactive systems fail because indications from a single test level do not justify a positive evaluation. 45 references.

000916 Bunney, William E., Jr.; Kopanda, R. T.; Murphy, D. L. NIMH, 9000 Rockville Pike, Bethesda, MD 20014 **Sleep and behavioral changes possibly reflecting central receptor hypersensitivity following catecholamine synthesis inhibition in man.** Acta Psychiatrica Scandinavica (Kobenhavn). 56(3):189-203, 1977.

A study reporting marked decrease in total hours of sleep in depressed and manic patients on days 3 and 4 following discontinuation of alpha-methyl-para-tyrosine (AMPT), a specific inhibitor of the synthesis of the neurotransmitters, norepinephrine and dopamine is presented. Discontinuation of two precursors of biogenic amines, L-dopa and L-tryptophan, produced no changes in total sleep. It is suggested that the decrease in sleep following AMPT may result from catecholamine neuronal receptor hypersensitivity induced during AMPT treatment. Animal data consistent with this hypothesis are reviewed. The importance of studying rebound phenomena following psychoactive drugs and the practical therapeutic implications of these findings are discussed. 48 references. (Author abstract)

000917 Busch, H. Psychiatrische Klinik der Freien Universitat, Nussbaumallee 36, D-1000 Berlin 19, Germany **/Controlling rater specific interference factors in clinical trials./** Zur Kontrolle untersucherabhangiger Storfaktoren bei der klinischen Prufung. Pharmakopsychiatrie/Neuro-Psychopharmakologie (Stuttgart). 10(3):152-162, 1977.

Nonspecific factors influencing the examiner in the course of clinical drug trials were examined. The examiner interacts with: 1) the person examined; 2) the information presented; and 3) the goals established. The results of such interactions surface during interviews, in the diagnosis of psychopathological conditions, and during assessment of psychopathological syndromes in sample selection and drug efficacy evaluation. Some rater dependent factors can be eliminated through standardization of procedures and training with audiovisual recordings. A positive factor is that the AMP system provides standard questionnaires and glossaries. Instruments developed by behavior therapists seem particularly suited as standards for evaluation of patient behavior and correlation with drug efficacy findings. Although the ICD provides a comprehensive diagnostic scheme, detailed criteria for rating of patient mental states are still needed in several nosological regions. Patient selection on the basis of psychophysiological and biochemical characteristics may also improve control measures. To reduce rater dependent errors even further, it is recommended that attending psychiatrists refrain from judging the response of their own patients. 48 references.

000918 Debus, G. Psychologisches Institut der Universitat, Universitatsstr. 1, D-4000 Dusseldorf, Germany /**Theoretical and methodological aspects of psychotropic drug trials using healthy subjects.**/ Theoretische und methodische Aspekte der Wirkungsprufung psychiatrischer Psychopharmaka bei gesunden Probanden. Pharmakopsychiatrie/Neuro-Psychopharmakologie (Stuttgart). 10(3):109-118, 1977.

The intrinsic effect of psychotropic drugs on healthy persons (socalled Eigenwirkung) was studied as a measure of expected activity in psychiatric patients. The theoretical underpinning of efficacy assessments is derived from three psychological methodologies: 1) diagnosis of functional and behavioral variables; 2) test psychological differentiation of behavior and personality structures; and 3) experimental stimulus/response studies. Comparative tests of drug effects on mental function are used most frequently; they can be expected to yield more reliable data when problems of standardization and replicability are solved. Psychological test determinations of changes in personality under the influence of central modifiers are used less frequently, partly because of paradoxical shifts in the target factors neuroticism and psychoticism. Experimental activation of psychotic tendencies in healthy subjects for determination of antipsychotic drug efficacy has not produced uniform results. Data obtained from subjects under artificially induced stress with respect to attentiveness and anxiety are similarly inconclusive, since the mechanism of action remains unknown. It is concluded that the three approaches are not mutually exclusive, but complement each other. 22 references.

000919 Doller, Joanne C. Special Studies Clinic, Massachusetts General Hospital, Boston, MA **Tardive dyskinesia and changing concepts of antipsychotic drug use: a nursing prospective.** Journal of Psychiatric Nursing and Mental Health Services. 15(11):23-26, 1977.

The extrapyramidal syndrome, tardive dyskinesia, is described and discussed, outlining current standards for antipsychotic drug use and suggesting a nursing approach consistent with current understanding of neuroleptic drugs. The syndrome's characteristic abnormal involuntary movements may occur in as many as 50% of patients treated with high doses of antipsychotic medication for long time periods, with little understanding of the pathology and mechanisms involved. Current antipsychotic drug use emphasizes restriction to psychotic patients and use of the lowest dose possible for the shortest time period. The nurse's role in diagnosing dyskinesia is considered crucial since both knowledge of medication and opportunities for informal patient observation exist. Routine screening for tardive dyskinesia is recommended for patients on antipsychotic drug maintenance. 19 references. (Author abstract modified)

000920 Dornbush, Rhea; Boulougouris, John; Volavka, Jan; Kokkevi, Anna. Reproductive Biology Research Foundation, St. Louis, MO **Methods of acute inhalation experiments.** In: Stefanis, C., Hashish: studies of long-term use. New York, Raven Press, 1977. 181 p. (p. 21-23).

The drugs, procedures, and methods of data processing used in a series of studies conducted in Greece to determine whether the acute effects of smoking marihuana or other cannabis substances are altered in long-term hashish users as compared to those occasional, short-term users or control subjects are described. The subjects smoked different preparations of cannabis containing 0mg to 180mg of delta9-tetrahydrocannabinol (delta9—THC as marihuana (2.6% delta9-THC), purified delta9-THC, and hashish (4.5% delta9-THC). These substances were mixed with tobacco and rolled into cigarettes. The marihuana, two doses of hashish, and placebo were administered in a random order, but the delta9-THC was always the last condition. Analysis of data revealed that the order in which the drugs were given, especially the administration of delta9-THC as the last condition, may have affected performance in the psychological test battery.

000921 Dornbush, Rhea; Liakos, Aris; Kokkevi, Anna. Reproductive Biology Research Foundation, St. Louis, MO **Methods of withdrawal study.** In: Stefanis, C., Hashish: studies of long-term use. New York, Raven Press, 1977. 181 p. (p. 25-31)

The procedures, drugs, and data processing methods used in a series of studies conducted in Greece to determine the subjective, physical, psychological, neurological, and psychiatric consequences of abrupt withdrawal from marihuana in subjects with a history of long-term hashish use are described. All subjects smoked marihuana ad libitum during two 30 min sessions for 2 days after which they were admitted to the hospital. While hospitalized, half of the subjects smoked marihuana ad libitum during two 30 min sessions daily for 3 days followed by smoking placebo during two 30 min sessions daily for 3 days, while the other half of the subjects received placebo first. Self-ratings of estimates of the "mastura" or "high' were reflected by anxiety, depression, restlessness, fatigue, and irritability recorded on a 10 point scale. In addition, a psychological test battery was administered, a neurological examination was performed, a structured psychiatric interview was conducted, and physiological and subjective measurements were recorded.

000922 Ferner, U. Medizinisch-Biologische Forschung der Sandoz AG, Lichstr. 35, CH-4002 Basel, Switzerland /**Statistical aspects of psychotropic drug trial designs.**/ Statistische Aspekte zur Planung von Psychopharmakaprufungen. Pharmakopsychiatrie/Neuro-Psychopharmakologie (Stuttgart). 10(3):132-139, 1977.

Statistical factors germane to clinical trials of psychotropic drugs are reviewed. A schematic listing of a basic trial design contains the following consecutive steps: 1) statement of the problem; 2) establishment of criteria for efficacy and assessment of extraneous influences; 3) development of a test plan incorporating such factors as patient selection, duration, dosage, evaluation of efficacy, and analysis; 4) statistical evaluation of nonspecific variables, subgroup identification, symmetrical structuring, choice of analytical method, and formulation of a hypothesis; 5) conduct of the trial under constant observation; 6) statistical evaluation by confirmation of model expectations and hypothesis; and 7) medical interpretation of statistical significance versus clinical relevance. The above schematic plan is rarely realized in practice; compromises in the adjustment of clinical and statistical requirements may be necessary. 7 references.

000923 Goldberg, H. L.; Finnerty, R. J.; Cole, J. O.; Rickels, K. Psychopharmacology Outpatient Research Group, Boston State Hospital, Boston, MA **Collaborative studies in private practice.** Psychopharmacology Bulletin. 13(1):73-77, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, a study of the clinical efficacy of doxepin versus imipramine in the treatment of psychoneurotic depressive reactions in 120 patients conducted over four weeks in two comparable treatment settings to demonstrate the feasibility of conducting collaborative research studies in

private practice is reported. No significant differences in drug effects were found as a function of treatment, time, or location of research setting. It is suggested that the advantages of collaborative studies include: 1) pooling of large number of comparable patients; 2) collecting large uniform patient data banks; and 3) the ability to perform more comprehensive statistical procedures. 5 references.

000924 Heimann, H. Psychiatrische Universitatsklinik, D-7400 Tubingen, Germany /General methodological problems of clinical psychotropic drug trials./ Allgemeine methodologische Probleme der klinischen Prufung von Psychopharmaka. Pharmakopsychiatrie/Neuro-Psychopharmakologie (Stuttgart). 10(3):119-129, 1977.

Problems encountered in clinical trials of psychotropic drugs with regard to patient group composition and double-blind procedures are reviewed. Examination of research data discloses that patient groups used in double-blind drug trials are not sufficiently homogeneous to support statements about specific drug activity. Global mechanisms of action have been demonstrated with moderate success in the case of neuroleptics, thymoleptics, and minor tranquilizers, but the number of nonresponding patients is still relatively high. Drug specificity, when compared across different patient groups, is not impressive. A possible remedy is the assignment of patients to subgroups on the basis of biochemical or psychophysiological findings. Another approach is to examine the clinical, psychophysiological, and biochemical differences between responding and nonresponding patients. In the case of thymoleptics, studies of subgroups may lead to correlation with psychopathological symptoms. A broad spectrum drug may find wide application, but the failure rate will also increase. It is concluded that research aimed at development of drugs with high specificity rests on sound scientific principles. 8 references.

000925 Hindmarsh, K. W.; Hamon, N. W.; LeGatt, D. F. College of Pharmacy, University of Saskatchewan, Saskatoon, Saskatchewan, Canada Simultaneous identification and quantitation of diphenhydramine and methaqualone. Clinical Toxicology. 11(2):245-255, 1977.

Methods for the simultaneous identification and quantitation of diphenhydramine and methaqualone in urine were investigated; and thin layer and gas chromatographic techniques were developed. The extraction techniques were evaluated by extracting human urine after the ingestion of therapeutic dosages of the two drugs. A charcoal cartridge technique proved to be superior to direct solvent extraction. Although enzyme hydrolysis gave slightly better recoveries than the charcoal cartridge technique, it is a time consuming procedure. 33 references. (Author abstract)

000926 Kirkegaard, C.; Bjorum, N.; Cohn, D.; Faber, J.; Lauridsen, U. B.; Nerup, J. Psychology Department D, Frederiksberg Hospital, DK-2000, Copenhagen F, Denmark Studies on the influence of biogenic amines and psychoactive drugs on the prognostic value of the TRH stimulation test in endogenous depression. Psychoneuroendocrinology (Oxford). 2(2):131-136, 1977.

The influence of biogenic amines and psychoactive drugs on the prognostic value of the thyrotropin releasing hormone (TRH) stimulation test was studied in 21 patients with endogenous depression. By means of the variations in the maximal thyroid stimulating hormone (TSH) response to TRH before and after treatment, it was possible to predict early relapse in all of 14 patients and a recovery continuing more than 6 months in five or seven patients. The increase in the change in maximum TSH was signifcantly greater in the group without relapse than that of the group with relapse. The changes in the serum concentrations of the thyroid hormones were small and of the same order in the two groups. The prognostic value was not affected by small doses of phenothiazines and benzodiazepines. Short-term administration of chlorpromazine resulted in a small, but significant increase in the maximal TSH response to TRH. Short-term administration of imipramine and diazepam did not affect the TSH response; neither did manipulation of adrenergic alpha and beta receptors nor administration of L-5-hydroxytryptophan. 13 references.

000927 Muller-Oerlinghausen, B.; Riedel, E.; Schley, J. Psychiatrische Klinik, Freie Universitat Berlin, Nussbaumallee 36, D-1000 Berlin 19, Germany Thin-layer and gas-liquid chromatographic procedures for the determination of perazine and its metabolites in human body fluids. International Journal of Clinical Pharmacology and Biopharmacy (Munchen). 15(8):366-372, 1977.

In a paper presented at the Seventh International Symposium on Clinical Pharmacology held in Pavia, Italy, September and October, 1976, the difficulties encountered in the quantitative determination of perazine and its metabolites in human body fluids are discussed. Different methods for extraction and measurement of perazine concentration in blood samples are presented, with special emphasis on partition coefficients and the properties of thin layer chromatography and gas/liquid chromatography. A new and simple method for rapid gas chromatographic determination of perazine is described. 14 references. (Author abstract modified)

000928 Osselton, M. D.; Hammond, M. D.; Twitchett, P. J. Home Office Central Research Establishment, Aldermaston, Reading, Berkshire RG7 4PN, England The extraction and analysis of benzodiazepines in tissues by enzymic digestion and high-performance liquid chromatography. Journal of Pharmacy and Pharmacology (London). 29(8):460-462, 1977.

A simple, rapid and sensitive method is described for the analysis of unchanged benzodiazepine drugs and their metabolites, in human and animal tissues, using the proteolytic enzyme subtilisin Carlsberg followed by reverse phase liquid chromatography. The enzymic digestion yields far higher recoveries than conventional extraction methods, while the liquic chromatographic analysis allows the rapid separation and detection of nanogram quantities of these drugs without the need for elaborate cleanup procedures. 7 references. (Author abstract)

000929 Priest, R. G. Department of Psychiatry, St. Mary's Hospital, Harrow Road, London, W9 3RL, England Being a patient in a drug trial: do you lose something? Neuropharmacology (Oxford). 16(7/8):532, 1977.

In a paper presented at the Proceedings of the British Association for Psychopharmacology, July 1976, Cambridge, England, a method of testing the null hypothesis that there is no difference in the response of patients to the tricyclic antidepressant drug protriptyline whether they are in a double-blind drug trial or whether they are treated openly is reported. In carrying out a double-blind comparative trial between nortriptyline and protriptyline, an elaborate test battery was devised and administered to patients randomly allocated to either drug, and results were analyzed. The test battery was also used during ordinary clinical practice on patients who had been treated with protriptyline, who had not been induced into

an experimental situation, and who had been assessed on the same measures as those used in the double-blind trial. One measure used was the Zung Self-Rating Depression Scale. Comparison of results of 14 patients on protriptyline in the trial with scores obtained by 16 patients taking the same drug only under clinical circumstances showed that improvement in both sets of Ss was equivalent. It was concluded that the experimental circumstances for drug trials compare favorably with clinical circumstances for observing medication effects. 4 references. (Author abstract modified)

000930 Rybakowski, Janusz; Frazer, Alan; Mendels, Joseph; Ramsey, T. Alan. Affective Diseases Research Unit (151E), VA Hospital, University and Woodland Avenues, Philadelphia, PA 19104 **Prediction of the lithium ratio in man by means of an in vitro test.** Clinical Pharmacology and Therapeutics. 22(4):465-469, 1977.

An in vitro methodology for the prediction of the lithium ratio in man, of utility in biochemical investigations of the pathogenesis of affective disorders, is described. The movement of the lithium ion (Li) across the membrane of intact erythrocytes incubated in vitro was assessed under two different experimental conditions in which such transfer occurred primarily due to the activity of a lithium-sodium countertransport system. The 13 subjects on whom the in vitro procedures were done subsequently received lithium carbonate for 14 to 56 days, and the extent of accumulation of Li by erythrocytes in vivo was measured. While both in vitro procedures yielded data that correlated with the extent of accumulation of Li by erythrocytes in vivo, a system measuring the efflux of Li from Li loaded cells produced a much higher correlation (0.976). The magnitude of this correlation suggests that this in vitro system can be used for further investigations into the relevance of the erythrocyte accumulation of Li to the pathogenesis and treatment of affective disorders. 25 references. (Author abstract modified)

000931 Saletu, B.; Grunberger, J.; Linzmayer, L. Section of Pharmacopsychiatry, Psychiatrische Universitatsklinik Wien, Wahringer Gurtel 74-76, A-1070 Wien, Austria **Classification and determination of cerebral bioavailability of psychotropic drugs by quantitative "pharmaco-EEG" and psychometric investigations (studies with AX-A411-BS).** International Journal of Clinical Pharmacology and Biopharmacy (Munchen). 15(10):449-459, 1977.

The classification and determination of cerebral biovailability of psychotropic drugs by quantitative "pharmaco-EEG" and psychometric investigations was researched. It is argued that by utilizing computerized quantitative analysis of the human scalp recorded electroencephalogram (EEG), it is possible to classify psychotropic drugs. While neuroleptic compounds produce an increase of slow and decrease of fast activities, anxiolytic substances induce an augmentation of fast waves, decrease of alpha waves and, according to the sedative properties of the drug, an increase or decrease of slow waves. Antidepressants produce a concomitant augmentation of slow and fast activities as well as an attenuation of alpha waves. Nootropic substances attenuate slow activities, augment alpha and slow beta waves and decrease fast beta waves, opposite to age related changes. Since the main psychopharmacological classes seem to have characteristic pharmaco-EEG profiles, the method proved to be useful for determination of psychoactivity and cerebral bioavailability of newly developed substances as for instance AX-A411-BS, a new benzodiazepine. Psychometric tests measuring attention, psychomotor activity, mood, vigilance, extroversion, concentration and personality dimensions showed also that AX-A411-BS is a psychoactive compound with a long-lasting effect. 20 references. (Author abstract)

000932 Schmocker, A. M. Universitats-Nervenklinik, Osianderstr. 22, D-7400 Tubingen, Germany **/Control of distorting factors./** Kontrolle von Storfaktoren. Pharmakopsychiatrie/Neuro-Psychopharmakologie (Stuttgart). 10(3):149-151, 1977.

Nonspecific factors affecting the apparent action of psychotropic drugs are enumerated, and control measures to minimize such influences are proposed. Since most nonspecific factors can be assessed only after completion of drug trials, their influence can be anticipated only hypothetically, based on experience. The sources of extraneous factors are: 1) the patient; 2) the therapist; 3) the therapeutic environment; and 4) the patient's private setting. The relative weight of these factors changes with the condition treated. The presence or absence of modifying anamnestic or personality factors can be established with special questionnaires and AMP documentation forms. Comparative drug trials require that nonspecific factors be equally represented in test and control groups. A pilot study to establish drug activity does not justify ascribing effectiveness or inertness to a preparation on the basis of the patient's condition alone. The sample is divided into responders and nonresponders to examine the presence of positive and negative factors in each subgroup. Spontaneous remissions may be due to events influencing the patient during drug trials. A daily record of the patient's mood and activities (trips, visits, group conversations, telephone calls, etc.)will prove helpful. Several patients with synchronous remissions are most probably showing effects of the drug. Such patients can provide criteria for the evaluation of subsequent double-blind trials. 5 references.

000933 Uhlenhuth, E. H.; Stern, M.; Schuster, C. R.; Domizi, D. Dept. of Psychiatry, University of Chicago, Chicago, IL 60637 **Diazepam: efficacy and toxicity as revealed by a small sample research strategy.** In: Sudilovsky, A., Predictability in Psychopharmacology. New York, Raven Press, 1975. (p. 105-115).

Identification and measurement of certain potential sources of variability in the efficacy and toxicity of antianxiety agents are described. Extraneous variability was reduced by structuring a closely controlled test situation with a small number of subjects. Diazepam was chosen for study as a well established antianxiety agent. Effects on three psychomotor performances and on subjective mood were measured. Possible sources of variability in response selected for study were medication dose, and contingencies associated with task performance. The data suggest means for more economical and convenient evaluation of efficacy and toxicity of antianxiety agents in humans. 12 references. (Author abstract modified)

000934 Ulrich, G. Abt. Psychophys. Freie Universitat Berlin, Nussbaumallee 36, D-1000 Berlin 19, Germany **/Videotape methods for identification of nonverbal behavior parameters in depressive syndromes./** Videoanalytische Methoden zur Erfassung averbaler Verhaltensparameter bei depressiven Syndromen. Pharmakopsychiatrie/Neuro-Psychopharmakologie (Stuttgart). 10(3):176-182, 1977.

The utility of videotape recordings in assessing nonverbal cues in drug trials with depressive syndromes was investigated. The advantages of videotape techniques include improved objectivity of data due to comparisons and more thorough exploitation of available information. Averbal cues consist of hand movements, gestures, facial expressions,

posture, eye movement, and agitation. The classification, frequency, and duration of hand movements of depressives are reviewed. Correlations were found between the severity of illness and body focused motions of the hands. An examination of lateral preference in hand movements by 7 depressive female patients showed a significant shift of activity to the left hand. Three patients lost their preference for left laterality in the course of drug treatment. A possible explanation is found in the lowered vigilance and concomitant maturation deficits in depressives, which may be responsible for differences in EEG and eye movements. Video recordings offer opportunities to collect data on a large scale, and these data are needed to support possible neurophysiological interpretations of disorders marked by limited competence in communication. 28 references.

000935 Woggon, Brigitte. Forschungsdirektion Psychiatrische Universitatsklinik, Postfach 68, CH-8029 Zurich 8, Switzerland **/Difficulties encountered by the clinical researcher in planning psychotropic drug trials./** Schwierigkeiten bei der Planung von Psychopharmakaprufungen aus der Sicht des klinischen Prufers. Pharmakopsychiatrie/Neuro-Psychopharmakologie (Stuttgart). 10(3):140-146, 1977.

Problems encountered by researchers in planning clinical trials of new psychotropic drugs are outlined and possible solutions are suggested. Untested substances usually arrive at the clinic with vaguely formulated requests for verification of efficacy, accompanied by results of animal experiments, or a clinical pilot study with 10 to 15 rather heterogeneous patients may be reported. Comparisons between tried and untried preparations are difficult because of sample, dosage, and test instrument variability. The number of questions which can be answered by a single trial is limited by the patient material available, and double-blind trial with two groups of 20 endogenous depressives may take 18 months to complete. Some researchers demand controls without drug intake to circumvent the placebo effect. The expectations of therapists and patients cannot be neutralized in any case. A standard guide to the length of trial periods is lacking. Acute trials are more easily controlled but do not inform about success rates. Additional problems arise from questions of control intervals, sample size, and the diagnostic composition of the patient group. Furthermore, the required drug free period before trial inception is not always practicable. Rating scales used in the assessment of drug efficacy are not sensitive enough to disclose differences in activity of preparations under comparison. Since individual responses to drugs are measured against initial clinical diagnosis, a second interview and examination prior to the trial may prove valuable as a baseline. 18 references.

17 MISCELLANEOUS

000936 Abe, Kazuhiko. Department of Psychiatry, Osaka City University Medical School, Abenoku, Osaka, Japan **Lithium prophylaxis of periodic hypersomnia.** British Journal of Psychiatry (London). 130:312-313, 1977.

The case of a patient with periodic hypersomnia unaccompanied by disturbances of mood or appetite, in which recurrence of the episodes was successfully prevented with lithium, is presented. It is noted that hypersomnia is usually treated with stimulants, but response may not be favorable and side-effects may be significant. In the patient, a 15-year-old male, the placebo effect was ruled out, as he had been given various drugs without effect. Other reports of lithium therapy with hypersomnia are summarized. 4 references. (Author abstract modified)

000937 Barkley, Russell A. Child Development and Rehabilitation Center, University of Oregon Health Sciences Center, Portland, OR 97207 **A review of stimulant drug research with hyperactive children.** Journal of Child Psychology and Psychiatry and Allied Disciplines (London). 18(2):137-165, 1977.

Stimulant drug research with hyperactive children is reviewed in terms of the effectiveness of these drugs in treating hyperkinesis, the side-effects, biochemical and physiological effects, effects on behavior and test performance, and long-term effects. The literature indicates that most children are judged improved while on stimulant drugs while a small percentage are not. Although most side-effects are transitory, suppressed weight gain may remain problematic throughout treatment. The drugs appear to energize the CNS of these children while increasing their ability to concentrate without responding impulsively. Changes in other abilities are occasionally observed but appear to result from improvement in attentional processes. In contrast, followup studies find the long-term psychosocial adjustment of these children to be essentially unaffected by stimulant drug treatment. 159 references. (Author abstract modified)

000938 Bielski, Robert J.; Friedel, Robert O. University of Washington School of Medicine, Seattle, WA 98195 **Subtypes of depression -- diagnosis and medical management.** Western Journal of Medicine. 126(5):347-352, 1977.

The characteristics of four subtypes of depression which appear to be differentially sensitive to four different classes of medication are defined. It is noted that the tricyclic antidepressants should be used for patients with unipolar depression and vegetative symptoms. Lithium appears to be most effective for bipolar depressives. The monoamine oxidase inhibitors are best used for patients with atypical depression. Antipsychotic medications appear to be useful for depressed patients with psychotic symptoms or agitation. Recent pharmacokinetic and biochemical data, including serum lithium levels, plasma tricyclic levels, and the predictive ability of pretreatment urinary 3-methoxy-4-hydroxyphenylglycol (MHPG) levels are also reviewed. 74 references. (Author abstract modified)

000939 Blair, T.; Webb, G. A. Department of Chemical Physics, University of Surrey, Guildford, Surrey, England **Electronic factors in the structure-activity relationship of some 1,4-benzodiazepin-2-ones.** Journal of Medicinal Chemistry. 20(9):1206-1210, 1977.

Some significant correlations are observed between the CNS activities of a series of 59 benzodiazepines and some calculated electronic indices. The parameters concerned are the net charge of the carbonyl oxygen atom of the lactam ring and the total molecular dipole moment, correlations with the latter index being superior. The utility of the observed relationships is discussed. The positive linear correlation with oxygen charge density and the negative correlation with dipole moment are general for the four types of CNS depressant activity considered, and any variation in the ratio of the four activities with change in molecular structure would not be apparent from the relationships with these parameters. This fact, along with the inability of the regressions to predict the inactivity of compounds and with the marginal significance of some of the regressions, severely limits their use for predictive purposes. 20 references.

000940 Boethius, Goran; Westerholm, B. Department of Medicine, Ostersund's Hospital, S-831 01 Ostersund, Sweden **Purchases of hypnotics, sedatives and minor tranquillizers among 2,566 individuals in the county of Jamtland, Sweden: a 6-year follow-up.** Acta Psychiatrica Scandinavica (Kobenhavn). 56(2):147-159, 1977.

The purchase pattern of psychotropic drugs in 1975 in all individuals who obtained hypnotics, sedatives, and minor tranquillizers in 1970 in the county of Jamtland, Sweden, was investigated. Data from a continuous recording of drug prescriptions to 16,600 individuals revealed that 2,566 patients (15.5%) obtained prescriptions for hypnotics, sedatives, and minor tranquillizers in 1970. Occasional use (one purchase only, Group A) was seen in 7.4% of the population, intermediate use (two to six purchases, Group B) in 6.9% whereas 1.2% were regular users (seven purchases or more, Group C). For each group as a whole there was 5 years later a highly significant intraindividual reduction in the purchases of these drugs as well as of other psychotropic drugs. In all groups 10 to 23% had increased their purchases, most of them insignificantly. Fifteen of 30 patients with a marked increase in consumption developed a regular purchase pattern, but signs of overuse or abuse were seen in only four persons. During the studied period the benzodiazepines increased their share of the total from 45 to 60%. Antihistamines also increased in all groups while the proportion of barbiturates and combined preparations decreased markedly. 10 references. (Author abstract modified)

000941 Bunney, William E., Jr. Adult Psychiatry Branch, NIMH, 9000 Rockville Pike, Bethesda, MD 20014 **Psychopharmacology of the switch process in affective illness. (Unpublished paper).** Bethesda, MD, NIMH, 1977. 21 p.

Research and methodological issues concerning drug induced switches from depression to mania or from mania to depression in the treatment of affective illness are reviewed. Both tricyclic compounds and monoamine oxidase inhibitors (MAOI) appear to precipitate mania or hypomania in 10% of the affectively ill patients receiving them. Chlorimipramine selectively precipitates mania, while L-DOPA selectively precipitates hypomania. Reserpine, imipramine plus parachlorophenylalanine (PCPA) and MAOI plus PCPA, physostigmine, and cortisol administration, as well as amphetamine withdrawal, have been associated with the onset of depression. It is suggested that specific changes in brain

metabolism precede these switches and that increased knowledge of the mode of action of these pharmacological agents will contribute to an understanding of the manic-depressive process. 133 references.

000942 Chadha, Dev R.; Dasilva, Lexley M. Medical Development, Hoechst Pharmaceuticals Limited, Bombay, India **The Placebo in clinical psychopharmacology.** Current Therapeutic Research (Tenafly). 21(5):748-752, 1977.

The mechanism of the placebo effect in clinical psychopharmacology is explored. Controlled drug trials are made less reliable by the placebo effect, especially in cases of depression and anxiety, which are subject to spontaneous exacerbations and remissions. Definite changes in central neurotransmitters have been shown, only in schizophrenia and manic depressive psychosis, though recently the role of central amines in mood disorders is gaining recognition. Autosuggestion has been established as the main component of placebo response, and it is generally conceded that the body may react not only to direct physical and chemical stimulation, but also to symbolic stimuli such as words and events charged with special meaning. The importance of the placebo lies in distinguishing effects of drug from effects of suggestion and providing access to fundamental mechanisms of drug action. Placebo therapy carries with it the necessity for thorough diagnosis with the simultaneous inadvertent danger of bypassing appropriate medication. 19 references.

000943 Clark, Matt; Gosnell, Mariana; Shapiro, Dan. no address **The new war on pain.** Newsweek. April 25:48-50, 55-56, 58, 1977.

Medical advances and theories involving the relief of chronic pain are explored. The treatment of chronic pain has developed into a new medical specialty called dolorology. Experts distinguish between two main types of pain; peripheral and central. Chronic pain in then classified into six major categories: 1) muscle and joint pain; 2) causalgia; 3) neuralgia; 4) phantom limb pain; 5) vascular pain; and 6) terminal cancer pain. New advances in the treatment of chronic pain include the adoption of the gate control theory and the use of enkephalins, the body's own opiates. Other techniques used to control chronic pain include surgery, drugs, hypnosis, acupuncture, and electrical stimulation.

000944 Cole, Jonathan O. Institute of Research and Rehabilitation, Boston State Hospital, Boston, MA 02124 **Research barriers in psychopharmacology.** American Journal of Psychiatry. 134(8):896-898, 1977.

Barriers to psychopharmacological research, including attacks by vocal human rights groups, regulation by local review boards, and Department of Health, Education, and Welfare restrictions are discussed. Recent attacks on psychiatric drug research by small groups of enraged citizens have caused some public mental hospitals to abandon all drug research at a time of rising public pressure to demonstrate the effectiveness of drug therapy. The unworkability of institutional review boards is discussed, emphasizing the nearsightedness of these boards. Regarding the issue of informed consent, it is suggested that those patients least able to give informed consent are most in need of the benefits of research on new drugs.

000945 Coleman, Arthur H. 6301 Third St., San Francisco, CA 94214 **Drug interactions.** Journal of Legal Medicine. 5(9):49-54, 1977.

A discussion on drug interactions is presented with emphasis on specific occurrences: 1) indifference-interaction (absence of reaction between two drugs); 2) additive interaction (a simple summation between the effects of drugs that act alike); 3) potentiation interaction (the effect is greater than expected); and 4) antagonism interaction (one drug opposes another and thereby lessens or alters the intended therapeutic effect). Malpractice can become an issue in cases of drug interactions where liability is found for adverse drug reactions in patients under doctor's care. Computerized data drug information processing facilities, which would include drug histories, data on drug interactions and patient histories, are held vitally necessary for full dissemination of drug information to pharmacotherapists. 14 references.

000946 Coyle, Joseph T. Johns Hopkins Hospital, Baltimore, MD 21205 **Psychiatric drugs in medical practice.** Medical Clinics of North America. 61(4):891-905, 1977.

The principles of use of three types of psychotropic medications (the tricyclic antidepressants, lithium, and the neuroleptics) are briefly reviewed. Four issues are explored in regard to each medication: 1) which psychiatric illnesses respond to the drug; 2) what is the mechanism of action of the drug; 3) what is an appropriate treatment regimen; and 4) what are the common side-effects associated with the drug. 34 references.

000947 Eichelman, Burr. Dept. of Psychiatry, Stanford Medical Center, Stanford, CA 94305 **Neurochemical studies of aggression in animals.** Psychopharmacology Bulletin. 13(1):17-19, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, neurochemical studies of aggression in animals are reviewed. The effects of various drugs which affect neurotransmitter metabolism on the induction of shock induced aggression are discussed. It is posited that experimental manipulation can be undertaken within specific species and within specific model systems of aggressive behavior. Interventions can, with moderate probability, be attributed to either drug or lesion effects at specific sites and through specific mechanisms within the CNS. The data tend to suggest that the adrenergic CNS plays a substantial role in terms of affective aggression, while the cholinergic and serotonergic systems play a predominant role in predatory aggression. 13 references. (Author abstract modified)

000948 Fann, William E.; Stafford, John R.; Malone, Russell L.; Frost, James D., Jr.; Richman, Bruce W. Department of Psychiatry, Baylor College of Medicine, Houston, TX 77030 **Clinical research techniques in tardive dyskinesia.** American Journal of Psychiatry. 134(7):759-762, 1977.

Standardized assessment and control techniques designed to provide objective measures of tardive dyskinesia in patients progressing through an experimental treatment program are described. Standardized videotaping is carried out and blind ratings on the Abnormal Involuntary Movement Scale are made by a team of psychiatrists and neurologists. Other assessments include several measurements of vocal function and a quantitative acceleration profile standardized on normal subjects. Such measures allow quantifiable determination of response to drug treatment and may provide clues to the etiology and definition of the dyskinetic syndrome. 22 references. (Author abstract modified)

000949 Fieve, Ronald R. Department of Psychiatry, Columbia University College of Physicians and Surgeons, New York,

NY 10027 **The revolution defined: it is pharmacologic.** Psychiatric Annals. 7(10):10, 13, 16-18, 1977.

The great impact of psychopharmacology on psychiatric care and the changes it brought about are discussed. Prolonged hospital care for many disorders has become obsolete and emphasis has shifted to keeping the patient well in the community. In the U.S.,community mental health centers that emphasize short-term treatment, outpatient maintenance, and rehabilitation programs are becoming the dominant mental health mode. The use of phenothiazine tranquilizers and related compounds in the treatment of major psychoses decreases the number of hospital admissions, shortens the hospital stay, increases the number of discharges, and greatly increases the number of patients who have achieved social remission on followup. Antidepressants (tricyclics and MAO inhibitors) make it possible to treat rapidly and in some cases prevent severe depression. Lithium provided the first specific treatment for major affective disorders. In a widespread shift in public attitude, mental illness is no longer thought of as incurable and the mental patient is no longer hopelessly stigmatized. 22 references.

000950 Flanzer, Jerry P.; Aprill, Floyd A. School of Social Welfare, Univ. of Wisconsin, Milwaukee, WI **A diagnostic-treatment model for effective group treatment of drug abusers.** Journal of Psychedelic Drugs. 9(2):143-150, 1977.

A case is made for the adjunctive use of group therapy in methadone treatment of drug addicts, emphasizing differential diagnosis linked to specific treatment strategies. It is posited that group therapy for addicts is effective when treatment is individualized rather than forced on the whole group. A means of classification of drug addicts and some group approaches to treatment are outlined. Suggestions for further research are given in view of the lack of correspondence between outcome and rationale in the treatment literature. 68 references.

000951 Gagnon, Marc-Andre. Hopital Louis-H. Lafontaine, 7401 Hochclaga Street, Montreal, Quebec, H1N 3M5 Canada **Subjective phenomena in drug trials.** International Journal of Clinical Pharmacology and Biopharmacy (Munchen). 15(4):155-160, 1977.

In a paper before the Symposium on Recent Advances in Clinical Pharmacology, Quebec City, January 1976, subjective phenomena in drug trials are discussed in terms of three problems they present: problems of control, measurement, and analysis. These problems are examined as they relate to control of compliance with the drug regimen, the validity of rating scales and questionnaires, the subjectivity of the observer, and the resulting observations. Drug side-effects and statistical analysis of qualitative data are presented in detail. 20 references. (Author abstract modified)

000952 Ghosh, A.; Wig, N. N.; Murthy, R. Srinivasa. Department of Psychiatry, Postgraduate Institute of Medical Education and Research, Chandigarh, India **Prophylactic value of lithium in manic depressive psychosis -- genetic aspects.** Indian Journal of Psychiatry (Poona). 19(1):73-76, 1977.

In a study of the prophylactic value of lithium in manic-depressive psychosis, the response of 25 patients to lithium treatment was evaluated in relation to genetic factors. It was found that patients with a family history of affective illness were more often responders. All the nonresponders did not have a family history of affective illness in the first degree relatives. The results are discussed and the implications for further research presented. 11 references. (Author abstract modified)

000953 Goldsmith, William. Department of Psychiatry, University of California at Los Angeles, Los Angeles, CA **Psychiatric drugs for the non-medical mental health worker.** Springfield, IL, Charles C Thomas, 1977. 173 p. $11.50.

In order to provide for the nonmedically trained mental health worker, an understanding of the applications and effects of psychotherapeutic agents, basic background information in anatomy, physiology, and biochemistry is presented. The relationships between psychiatric drugs and basic neuroanatomy, endocrinology, cardiology, ophthalmology, and allergy are discussed. Separate sections are devoted to the phenothiazines, antidepressants, lithium, minor tranquilizers, barbiturates, and stimulants. The information provided for each group of drugs includes their actions, indications, possible contraindications side-effects, and what to look for in patients who are receiving them.

000954 Goldstein, Evelyn M. American Association of Medico-Legal Consultants, Park Town Place North, 2200 Benjamin Franklin Pkwy., Philadelphia, PA 19130 **Multiple drug therapy -- is there a standard of care?** Journal of Legal Medicine. 5(9):41-45, 1977.

In response to the increasing use of multiple drug therapy and incidents of adverse drug interactions, medicolegal aspects of multiple drug therapy and possible solutions are outlined. Suggestions are offered to physicians as to when to prescribe drugs to patients in these benefit/risk situations: 1) when the benefit far exceeds the risk; 2) when the benefit more than equals the risk; 3) when the benefit just equals the risk; and 4) when the risk of giving unknown combinations exceeds the benefit to the clinical condition. A Johns Hopkins study on the number of adverse reactions in 900 patients is used to illustrate drug/drug interactions, and results from that study indicate that 14% of subjects had adverse reactions when five drugs were used, when 15 or more drugs were given, 40 to 45% of the subjects developed adverse reactions. It is suggested that a clinical pharmacologist should alert the physician to drug interaction, and should automatically review patient's chart when more than two drugs are ordered. 8 references.

000955 Halpern, Werner I. Children and Youth Division, Rochester Mental Health Center, 1425 Portland Ave., Rochester, NY 14621 **The medication clinic in the spectrum of children's services.** Diseases of the Nervous System. 38(9):687-690, 1977.

The establishment of a centralized medication clinic in a mental health center in response to the increased use of and controversy over the use of stimulant drugs for the control of hyperactivity in children, is reported. A number of benefits were derived from monitoring the children through routine followup visits. One of the retrospective findings over a 3 year period was the low incidence and prevalence rates of medicated hyperactive youngsters in a high volume children's service. 22 references. (Author abstract modified)

000956 Himmelhoch, Jonathan M.; Poust, Rolland I.; Mallinger, Alan G.; Hanin, Israel; Neil, John F. Affective Disorders Clinic, Western Psychiatric Institute, 3811 O'Hara St., Pittsburgh, PA 15261 **Adjustment of lithium dose during lithium-chlorothiazide therapy.** Clinical Pharmacology and Therapeutics. 22(2):225-227, 1977.

Data from 13 patients taking lithium carbonate concomitantly with chlorothiazide are analyzed to indicate the approximate magnitude of downward adjustment of daily lithium dose. It is posited that thiazide diuretics may be given safely

to patients receiving lithium and may, in fact, be indicated in the treatment of patients with lithium induced nephrogenic diabetes insipidus or in patients with severe manic-depressive illness in whom high doses of lithium do not produce therapeutic serum levels or erythrocytic levels of lithium. 17 references. (Author abstract modified)

000957 Joubert, P. Department of Pharmacology, University of Orange Free State, Bloemfontein, South Africa **Experience with a clinical pharmacological service in a teaching hospital.** International Journal of Clinical Pharmacology and Biopharmacy (Munchen). 15(9):419-423, 1977.

A South African teaching hospital's pharmacology department, in which the clinical function of patient service is rendered at two levels, by clinical pharmacologists and laboratory based pharmacologists, is described and evaluated, including a report on a reevaluation of levels of administration of drugs for the treatment of epilepsy. The clinical pharmacologists are medically trained people, available for therapeutic and toxicological consultation, for channeling requests for laboratory aid, and for interpretation of laboratory results. The laboratory based pharmacologists are people who have basic training in pharmacology, chemistry, and biochemistry, and are involved in qualitative and quantitative investigation of body fluids in cases of poisoning and therapeutic problems. It is noted that over 70% of poisoning cases seen are due to therapeutic agents. An analysis of the practice of administering a combination product containing both phenobarbitone and diphenylhydantoin (Garoin) to epileptic patients resulted in a change from an automatic increase in the administration of phenobarbitone when seizure control was inadequate to a recognition that groups of patients existed who responded differently to the two drugs, and that increasing levels of diphenylhydantoin was a more logical response in many cases of inadequate seizure control. 5 references.

000958 Kopin, Irwin J. Laboratory of Clinical Science, NIMH, Bethesda, MD 20014 **Mode of action of: antidepressants and central stimulants. (Unpublished paper).** Bethesda, MD, NIMH, 1977. 41 p.

An overview of evidence implicating each of the monoamines (or other putative central neurotransmitters) in the mode of action of various antidepressants and central stimulants is provided and a brief indication of how these actions have provided the bases for provocative hypotheses to explain on a biochemical level how drugs may act to alter mood or induce alterations of behavior in animals is presented. Topics discussed include fundamental processes at aminergic synapses, monoamine oxidase inhibitors, tricyclic antidepressants, amphetamine, cocaine, and other central stimulants. 113 references.

000959 Kramer, John C. Department of Medical Pharmacology and Therapeutics, University of California, Irvine, CA **Heroin in the treatment of morphine addiction.** Journal of Psychedelic Drugs. 9(3):193-197, 1977.

Erroneous conceptions of the addictiveness of heroin and its use in the treatment of morphine addiction are examined within the historical context that gave rise to them. From its initial synthesis in 1847 until the early 1900s heroin was used largely as a cough suppressant in small doses, and consequently unpleasant side-effects and habituation were only rarely reported. In 1899 heroin was first used in a substitution withdrawal treatment of morphine addicts. As its clinical use became more frequent, critics began to argue erroneously that heroin was more toxic and addictive than those drugs it sought to replace. Although heroin addiction was seen during the first decade of the 1900s, its incidence as a result of withdrawal treatment was grossly exaggerated. Available information suggests that the increase in heroin addiction and its popularity was the result of its easy availability on the illegal market once the opiates had been outlawed. The false information promulgated about heroin abuse and its use in the treatment of morphine addiction further contributed to the criminalization of its use and to the punitive treatment and attitudes which still influence current drug treatment practices and laws. 26 references.

000960 Lasagna, Louis. Department of Pharmacology and Toxicology, University of Rochester School of Medicine and Dentistry, Rochester, NY 14642 **The role of benzodiazepines in nonpsychiatric medical practice.** American Journal of Psychiatry. 134(6):656-658, 1977.

The role of benzodiazepines in nonpsychiatric medical practice, particularly in the treatment of emotional stress related somatic complaints as a means of sedation/hypnosis, is examined. The benzodiazepines are widely prescribed by many physicians for patients with depression, anxiety reaction, circulatory disorders, digestive disorders, tension headache, and pain in chest and back. According to various studies there is reason to believe that benzodiazepines not only possess the anxiolytic effects universally attributed to them but may also ameliorate somatic complaints affecting such systems as the cardiovascular and the gastrointestinal. Whether the benzodiazepines affect organ systems known to be linked in important pathophysiological ways to the nervous system deserves further study. 20 references. (Author abstract modified)

000961 Lechin, F.; van der Dijs, B. Univ. Central de Venezuela, Caracas, Venezuela **New treatment for headache: pathophysiologic considerations.** Headache. 16:318-321, 1977.

To determine the effectiveness of low doses of d-amphetamine plus propranolol in eliminating headache and other depressive manifestations in spastic colon patients, 163 subjects were treated with the drugs for periods ranging from 3 to 16 days. Results show that within the first 24 to 48 hours of start of treatment, immediate improvement occurred in 161 patients, and total disappearance of headaches and associated symptoms occurred after a few days. No relapses were observed as long as the drugs were taken. It is concluded that despite the failure of d-amphetamine as an antidepressive drug, d-amphetamine plus propranolol eliminated headache in this group. Additionally, a lack of psychomotor hyperexcitability was observed when d-amphetamine was administered. It is suggested that low doses of d-amphetamine and propranolol may contribute to the selective activation of the alpha adrenergic system, which is antagonic of the serotonergic system. (Journal abstract modified)

000962 Maickel, Roger P.; Zabik, Joseph E. Section on Pharmacology, Medical Sciences Program, Indiana University, Bloomington, IN 47401 **The pharmacology of anorexigenesis.** Life Sciences (Oxford). 21(2):173-179, 1977.

The pharmacology of anorexigenesis -- appetite suppression -- is reviewed historically and in relationship to other means of obesity control. It is noted that obesity is usually due to excessive food intake plus inadequate energy utilization, and the futility of treating obesity through increasing caloric output or restricting food intake is noted. Anorexigenic agents have been the treatment of choice. The roles of food and the brain as controlling influences in weight regulation are noted, the

historical development of anorexigenic agents is summarized, and the sites of action in the brain for anorexigenesis are discussed. Clinical questions are raised and directions for future research (understanding the neurobiochemistry of hunger and satiety, new approaches to weight control) are suggested. 43 references.

000963 Mason, Aaron S.; Nerviano, Vincent; DeBurger, Robert A. Eastern State Hospital, Lexington, KY 40508 **Patterns of antipsychotic drug use in four southeastern state hospitals.** Diseases of the Nervous System. 38(7):541-545, 1977.

To determine patterns of antipsychotic drug usage in state mental hospitals, drug prescription patterns for 1370 patients in Kentucky's four state hospitals were assessed. The most frequently prescribed drugs across all diagnostic categories were thioridazine, chlorpromazine, trifluoperazine, thiothixene, mesoridazine, and haloperidol. Polypharmacy was common, and a high frequency of antiparkinson drug orders was found. The prescription of two antipsychotic drugs and an antiparkinson drug was common in all four hospitals. Multiple dose schedules were found for 92% of the patients, with 58.8% of these receiving six or more doses daily. Data suggest that many physicians are not aware of basic psychopharmacological tenets: 1) polypharmacy should be avoided whenever possible; 2) there is no scientific support for the administration of more than one antipsychotic drug per patient; 3) polypharmacy is both unnecessary and expensive; and 4) multiple dosage schedules reinforce role validation and role commitment of the patient as a sick individual. 11 references.

000964 McErlane, K. M.; Curran, N. M.; Lovering, E. G. Drug Research Laboratory, Health Protection Branch, Tunney's Pasture, Ottawa, Ontario K1A OL2, Canada **Impurities in drugs I: imipramine, desipramine, and their formulations.** Journal of Pharmaceutical Sciences. 66(7):1015-1018, 1977.

To determine levels of impurities or contaminants in imipramine, desipramine, and their formulations, 19 lots of imipramine tablets and four lots of desipramine tablets were examined. Iminodibenzyl, desipramine, and 10,11-dihydro-5-(3-(methylamino-3'-dimethylaminopropyl)propyl)- 5H-dibenz(b,f)azepine dihydrobromide (I) were found in some imipramine tablets, and iminodibenzyl and imipramine were found in some desipramine tablets, all at levels of less than 0.3% of label claim of the drug. Except for I, the identity of the impurities was established by comparison with known standards; I was synthesized and its composition was established by elemental analysis. All impurities, including I, were characterized by TLC, GLC, and mass spectrometry. 10 references. (Author abstract modified)

000965 Mendelson, Jack H. Harvard Medical School, Boston, MA **Endocrines and aggression.** Psychopharmacology Bulletin. 13(1):22-23, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, studies indicating that the same pituitary hormones (such as leutinizing hormone) and gonadal hormones (such as testosterone) which mediate human sexual behavior could also mediate aggressive behaviors in humans are reviewed. Abundant evidence exists that consumption of large quantities of alcohol may facilitate and perhaps induce violent and aggressive behaviors. Other studies have suggested that marihuana is not implicated in the genesis of aggressive behaviors and may prevent the expression of such behaviors. Alcohol and marihuana have differential effects on neuroendocrine and hormonal functions which covary with, and perhaps partially regulate, aggressive behaviors. 15 references.

000966 Meyer, Roger E. Department of Psychiatry, University of Connecticut School of Medicine, Farmington, CT 06032 **Subjects' rights, freedom of inquiry, and the future of research in the addictions.** American Journal of Psychiatry. 134(8):899-903, 1977.

It is argued that passage of regulations concerning subjects' rights and freedom of inquiry and opposition by the public and others has prevented the implementation or continuation of research in the addictions. Case studies, including two narcotic antagonist projects, are cited to show the impact of social pressures on this field of research. It is contended that research investigators have been placed in the position of defending their work in an adversary climate. The importance of transmitting to the public, the scientific community, and legislators the investigators' concern that subjects' rights not be viewed only in a legalistic context but also in the context of not harming the patient is emphasized. 11 references. (Author abstract modified)

000967 Murphy, Dennis L. Section on Clinical Neuropharmacology, LCS, NIMH, Bethesda, MD 20014 **The behavioral toxicity of monoamine oxidase-inhibiting antidepressants.** Advances in Pharmacology and Chemotherapy. 14:71-105, 1977.

A review of the literature pertaining to the behavioral toxicity of monoamine oxidase (MAO) inhibiting antidepressants is presented. The specific behavioral changes associated with iproniazid, phenelzine, and tranylcypromine are discussed, with informaton being provided on: 1) the type and incidence of behavioral changes associated with each drug; 2) the incidence of behavioral changes as a function of dosage and duration of treatment; and 3) the differences in adverse behavioral changes reported in different patient subgroups. Other topics discussed include: 1) adverse behavioral changes associated with pargyline, isocarboxazid, procarbazine, nialamide, and pheniprazine; 2) a comparison of the adverse behavioral effects associated with MAO treatment and those occurring during treatment with other antidepressants, including tricyclic antidepresssants, levodopa, L-tryptophan, dextroamphetamine, and lithium carbonate; 3) behavioral effects of MAO inhibitors in animals which may have relevance to their behavorial toxicity in humans; and 4) biochemical effects of MAO inhibitors in animals and man which may have relevance to their behavioral effects. It is also pointed out that withdrawal of MAO inhibitor treatment may also be associated with behavioral changes. 140 references.

000968 Murphy, Dennis L.; Shiling, David J.; Murray, Robin M. NIH Clinical Center, 10-3-S229, Bethesda, MD 20014 **Psychoactive drug responder subgroups -- possible contributions to psychiatric classification. (Unpublished paper).** Bethesda, MD, NIMH, 1977. 48 p.

The history of attempts to specify diagnostic entities in psychiatry is reviewed. The appearance of phenothiazines is seen as contributing to a blurring of diagnostic acumen because different psychoses (schizophrenia, mania and psychotic depression) all tended to respond to these drugs, while the increase of mania diagnosis is attributed to the advent of lithium carbonate. Other drug responder subgroups are discussed in connection with tricyclic antidepressants and inhibiting antidepressants. It is concluded that the hypothesis that responses to psychotropic drugs identify subgroups of psychiatric patients is not well supported by the available data, and that further consideration of drugs with more specific neu-

rochemical effects, which may not necessarily be therapeutic by themselves, might be a more productive area for exploration. 136 references.

000969 Netter, Petra. Institut fur Medizinische Statistik und Dokumentation der Universitat Mainz, Mainz, Germany /**The placebo effect.**/ Der Placebo-Effekt. Munchen Medizinische Wochenschrift (Munchen). 119(7):203-208, 1977.

The placebo effect is discussed, noting that although a placebo serves as a control substance in clinical drug trials and as a therapeutic agent in medical treatment, a clear distinction between a placebo and a true drug is often impossible, since the mechanism of action of the drug is sometimes incompletely understood and the therapeutic effect of the placebo is sometimes as pronounced as that of a pharmacologic substance. Factors influencing the effect of placebos are classified as: those of general psychopharmacologic concern, and those of interest in differential psychopharmacology. Reactions to placebos in healthy individuals are described in terms of the hierarchy of psychological parameters following the order of subjective emotional states, autonomic reactions, and mental or psychomotor performance. Additional factors determining placebo response, such as kind of instruction, type of application, size and color of placebo, and situational factors are discussed. 30 references.

000970 Overton, Donald A. Eastern Pennsylvania Psychiatric Institute, Henry Avenue & Abbottsford Road, Philadelphia, PA 19129 **Major theories of state dependent learning.** In: Ho, B., Drug Discrimination and State Dependent Learning: New York, Academic Press, 1977. In press. 64 p.

Major theories of state dependent learning (SDL) produced by drugs are reviewed in a comprehensive manner rather than critical manner. The review is divided into three main sections. The first part describes all the major theories or mechanisms that have been postulated to produce the phenomenon of SDL, such as clinical dissociative phenomena, dissociation of memory by drugs, stimulus theories, affect specific recall, anatomical ablation, neurological theories not involving ablation, functional ablation theories, and theories derived from human research. The second part discusses various demonstrated or hypothesized types of SDL which appear to have important theoretical ramifications. Several nonpharmacological manipulations have been shown to produce SDL like effects such as electroconvulsive shock, rapid eye movement sleep, lesions, spreading depression, circadian SDL, stress induced SDL, drive state SDL, REM deprivation SDL. The last part describes some of the postulated consequences of SDL in humans although these have not yet been investigated empirically for the most part. These include: dissociation of psychotherapeutic gains; dissociation under surgical anesthesia; state-boundedness, multiple systems of logic; and acquired drug effects. Since this paper is about theories, it does not review the central and well demonstrated factual properties of drug induced SDL and drug discrimination, nor does it focus exclusively on testable hypothesis; no new theories are proposed. 214 references.

000971 Pavan, F. Institute of Psychiatry, University of Pavia, Pavia, Italy **Notes on experiments with drugs in psychiatry.** International Journal of Clinical Pharmacology and Biopharmacy (Munchen). 15(8):363-365, 1977.

In a paper presented at the Seventh International Symposium on Clinical Pharmacology held in Pavia, Italy, in September and October, 1976, several observations on the methods used for drug experimentation in psychiatric patients are presented. Among the topics dealt with are: 1) the influence of intradisciplinary and interdisciplinary collaboration with other clinicians on the performance of an investigation; 2) the choice of subjects and factors which motivate the investigator in the selection of subjects; 3) the right of the patient to payment and insurance against risks while participating in a study; and 4) various methodological factors which contribute to the risks and/or advantages realized by both investigator and patient. Some methodological proposals for conducting drug studies in psychiatric patients are offered. 10 references.

000972 Petersen, Ronald C. Mayo Medical School, Rochester, MN 55901 **Scopolamine induced learning failures in man.** Psychopharmacology (Berlin). 52(3):283-289, 1977.

Scopolamine induced learning failures in man were studied in 24 volunteers. In the 1st experiment 24 men received 1 of 3 doses of scopolamine or placebo and the subjects were tested for retention of material learned prior to administration of the drug, acquisition of new information, and retention of material learned while under the influence of the drug. Results indicated that scopolamine has its primary effect on the acquisition of new material and less of an effect on the retrieval of information already learned. In the 2nd experiment, 18 men received 1 of 2 doses of scopolamine or placebo. The subjects were given 4 trials to learn a list of verbal materials, and their recall was measured at various intervals up to 24 hr. The results confirmed those of the 1st experiment in that the predominant influence of the drug was to impair the acquisition of new information. Implications of these results for memory mechanisms are discussed. 21 references. (Author abstract modified)

000973 Piepho, Robert W.; Gourley, Dick R.; Hill, John W. Department of Clinical Education and Services, College of Pharmacy, University of Nebraska, Omaha, NE 68105 **Minimal brain dysfunction.** Journal of the American Pharmaceutical Association. 17(8):500-504, 1977.

The diagnosis and treatment of minimal brain dysfunction (MBD), a cognitive and behavioral disorder associated with learning disabilities and impulsivity, are discussed with emphasis on the psychopharmacological treatment modalities. Drug therapy is the single most effective treatment for MBD, although individualized remedial education, psychotherapy and family counseling are also indicated. The centrally acting sympathomimetics, methylphenidate and dextroamphetamine -- the drugs of choice in the treatment of MBD -- are effective in about three fourths of affected children for the improvement of behavioral symptoms. The cognitive disability associated with MBD rarely will be totally alleviated by drug therapy. When methylphenidate or dextroamphetamine is not effective, magnesium pemoline or an antipsychotic agent such as chlorpromazine or thioridazine may be indicated. Tricyclic antidepressants (imipramine, etc.)have been used, but they are not as effective as psychostimulants and they may produce more serious side-effects. Antianxiety agents, anticonvulsants and miscellaneous drugs have been tried in MBD therapy but generally are of little or no value. The actions, interactions, dosage and side-effects of the various drugs, particularly methylphenidate and dextroamphetamine, are discussed in detail. 29 references. (Author abstract modified)

000974 Pinder, R. M.; Brogden, R. N.; Sawyer, Phyllis R.; Speight, T. M.; Spencer, Rosalind; Avery, G. S. no address **Pimozide ('Orap'-Ethnor): an independent report.** Current Therapeutics (Milford). 18(4):27, 29-30, 32, 1977.

Studies of the pharmacodynamics, pharmacokinetics, and therapeutic effects of pimozide are briefly summarized and the value of the drug in the treatment of chronic schizophrenia is discussed. Pimozide is advocated for once daily administration in the treatment of chronic schizophrenia and in the treatment of psychic and functional disorders induced by personality traits. In some trials, pimozide was significantly superior to haloperidol and trifluoperazine. The incidence and severity of extrapyramidal reactions with pimozide are low. Its relative lack of sedative properties precludes the use of pimozide in the treatment of the aggressive, hyperactive patient or in the treatment of the acute phase of schizophrenia. In anxious patients, pimozide seems to offer no advantage over currently available anxiolytic agents, either in terms of efficacy or incidence of side-effects. Claims for a specific anxiolytic effect in anxiety associated with psychosis or disturbed personality traits remain unproven. (Author abstract modified)

000975 Poklis, Alphonse; Burkett, Carl D. State Toxicology Laboratory, State University Station, Fargo, ND **Gasoline sniffing: a review.** Clinical Toxicology. 11(1):35-41, 1977.

A brief review of the literature concerning the acute toxicity, chronic toxicity, and complications of gasoline inhalation to produce a euphoric effect and of persons who engage in this practice is presented. The gasoline sniffer is most likely to be a male teenager from a low socioeconomic background and of marginal intellectual capability. Gasoline abusers are usually from broken homes, have inadequate father figures, or have parents who are alcoholic or physically abuse their children. Some sniffers exhibit homicidal or suicidal tendencies. Gasoline users are generally insecure and suffer numerous emotional problems. It is posited that the sociological and psychological factors which motivate persons to become continuously intoxicated by gasoline vapors are the same factors which motivate persons to other forms of substance and drug abuse; that is, a desire to escape or relieve anxiety and tensions. 49 references.

000976 Ponto, Laura Boles; Perry, Paul J.; Liskow, Barry I.; Seaba, Hazel H. no address **Tricyclic antidepressant and monoamine oxidase inhibitor combination therapy.** Journal of the Maine Medical Association. 68(8):283-289, 1977.

Changing views on concurrent therapy with monoamine oxidase inhibitors and tricyclic antidepressants is discussed. Though combinations of these agents has been considered potentially lethal, informed opinion has shifted from absolute contraindication to cautious recommendation. Mechanisms of interaction for these classes of drugs are discussed, and current animal and clinical observations are reviewed. It is concluded that the stimultaneous administration of these agents is potentially efficacious in refractory depression and safe if carefully monitored and controlled. 69 references. (Author abstract modified)

000977 Reid, A. H.; Leonard, A. Dundee Psychiatric Services, Strathmartine Hospital, Dundee DD3 0PG, Scotland **Lithium treatment of cyclical vomiting in a mentally defective patient.** British Journal of Psychiatry (London). 130:316, 1977.

Lithium treatment of cyclical vomiting in a mentally defective patient is described. The patient, a female aged 29 with an IQ of about 60, experienced repeated episodes of vomiting which were found to occur when she was depressed. It was decided to treat her as a case of manic-depressive psychosis with lithium and monitor the drug effect on mood state and vomiting. Lithium increased the occurrence of normal mood states and the incidence of vomiting; the drug also appeared to eliminate the previous relationship between vomiting and depressed states. The similarity of this case to cyclical vomiting in children is noted. 2 references. (Author abstract modified)

000978 Richards, William A.; Rhead, John C.; Grof, Stanislav; Goodman, Louis E.; DiLeo, Francesco; Kurland, Albert A. Maryland Psychiatric Research Center, Baltimore, MD **Dipropyltryptamine (DPT) as an adjunct in the counseling of cancer patients.** Archives of the Foundation of Thanatology. 6(2):No. 37, 1977.

Dipropyltryptamine (DPT) is presented as a potent tool within a constructive counseling relationship. It is noted that DPT would appear to have little usefulness as a chemotherapeutic agent and that the psychological effectiveness depends on extrapharmacological variables. Drug assisted counseling is viewed as often beneficial in decreasing stress in members of the patient's family, with the patient himself becoming the counselor for family members. Where indicated such treatment, it is suggested, facilitates death with dignity through a resolution of the feelings engendered by death and a coming to terms with mortality.

000979 Rossiter, Stanford B. no address **Propoxyphene-napsylate (Darvon-N or PN) in the treatment of heroin dependence.** Western Journal of Medicine. 127(1):78-79, 1977.

Indications, contraindications, and the legal status of the physician who prescribes doses in excess of those recommended on the package insert, of propoxyphene napsylate in the treatment of heroin dependence are discussed. It does not completely suppress withdrawal in persons addicted to large amounts of narcotics, but it appears to be adequate for control of the symptoms which occur in those addicted to heroin at the strength common in street use at present. Advocates claim that it produces fewer and less severe side-effects than methadone, although large doses taken at one time appear to predispose to convulsions. There is a significant potential for abuse and an illegal market for the two forms of the drug. 4 references.

000980 Sachar, Edward J.; Gruen, Peter H.; Altman, Norman. Dept. of Psychiatry, Albert Einstein College of Medicine, Bronx, NY **The use of prolactin response in clinical psychopharmacology.** Psychopharmacology Bulletin. 13(1):60-61, 1977.

In a paper presented at the 14th annual meeting of the American College of Neuropsychopharmacology, San Juan, Puerto Rico, in December 1975, a study in which prolactin responses to a variety of psychotropic drugs were examined in humans to investigate correlations between antipsychotic properties and effective blockade of dopamine (DA) activity in schizophrenics as measured by stimulation of prolactin secretion is reported. Chlorpromazine, trifluoperazine, butaperazine, fluphenazine, perphenazine, thioridazine, haloperidol, pimozide, thiothixene, molindone, and loxapine all markedly stimulated prolactin secretion, but promazine, promethazine, diazepam, imipramine, desmethylimipramine, and lithium did not. These prolactin data correlated as closely with the antipsychotic effectiveness of the drugs as other available techniques for measuring DA blockade. It is suggested that human prolactin response should be a useful screening test for potential antipsychotic drugs. The magnitudes of prolactin responses to single doses of the drugs were dose related. However, patients maintained on fixed doses of antipsychotic drugs maintained constant increased plasma prolactin levels over four weeks, suggesting that

tolerence in the tuberoinfundibular DA system does not develop.

000981 Scarf, Maggie. no address **From joy to depression: new insights into the chemistry of moods.** New York Times Magazine. April 24:30-34, 36, 1977.

The role of chemistry, particularly the biogenic amines, serotinin and norepinephrine, in depressive illness is discussed in terms of changing scientific hypotheses regarding the nature of the relationship between brain chemistry and mood. A case example of a woman maintained on lithium carbonate after episodes of mania and depression is presented, and the physiological changes associated with depression are listed. The discovery of the antidepressant qualities of iproniazid and the development of the tricyclic antidepressants are recounted, and the controversy over the exact mechanisms by which the biogenic amines and drugs have their effects is summarized. The contrasting view that enkephalins and endorphins are at least as important as biogenic amines in mood determination is noted, and implications of drug therapy for traditional psychotherapeutic techniques are suggested.

000982 Schrogie, John J.; Hensley, Michael J.; Digiore, Charles; Harris, Steven. Department of Clinical Pharmacology, Schering Corporation, 60 Orange Street, Bloomfield, NJ 07003 **Evaluation of the prison inmate as a subject in drug assessment.** Clinical Pharmacology and Therapeutics. 21(1):1-8, 1977.

A group of prisoner volunteers was compared to a group of student volunteers as subjects for drug testing, and the results were reported at the annual meeting of the American Society for Clinical Pharmacology and Therapeutics, Seattle, 1976. All subjects were males 18 to 45 yrs old. The 135 prisoner volunteers and 54 student volunteers were screened by laboratory tests, EKG, a physical examination, and medical history. A total of 88 prisoners completed the screening process, of whom 34 were excluded for medical reasons. Twenty four students were excluded for medical reasons. Prisoners and students were both given halazepam. The students reported a mood altering effect while the prisoners did not. When an objective measure of drug effect was measured, namely grip strength, prisoners showed the expected response. The results show that the prisoners in this study could not be relied upon to provide accurate information when reporting is based on subjective response. Thus, compliance should be evaluated in prisoner populations before doing a drug study. 18 references.

000983 Schultes, Richard E. Botanical Museum, Harvard University, Oxford St., Cambridge, MA 02138 **A new hallucinogen from Andean Colombia: Iochroma fuchsioides.** Journal of Psychedelic Drugs. 9(1):45-49, 1977.

The discovery of a new hallucinogenic plant, Iochroma fuchsioides, of the poorly understood solanaceous genus Iochroma of the Andean regions of southern Colombia, is reported. This shrub or small tree is used in a number of nonhallucinatory medicinal situations: in childbirth to stimulate labor, for colic, stomachache or digestive difficulties. When Iochroma fuchsioides is utilized hallucinogenically, a handful of rasped fresh bark from the stem and an equal amount of fresh leaves are boiled in water to make a tea, which, when cooled, is simply drunk. From one to three cupfuls of a strong decoction over a 3 hour period is said to be the usual dose for hallucinogenic use.

000984 Sclafani, Michael. Rutgers University Nursing Program, Rutgers University, Newark, NJ 07102 **Medication classes for the emotionally ill.** Journal of Psychiatric Nursing and Mental Health Services. 15(4):13-16, 1977.

A program of educational activities aimed at providing psychiatric patients with a fuller understanding of their medications and side-effects, offered as an adjunct to a consumer health education program dealing with major areas of psychosocial adjustment by Greystone Park Psychiatric Hospital, is described. During informal classes, small groups of patients engage in group discussion following pretesting on medication knowledge and attitudes. On the basis of the pretest and discussion, individual patient medication flyers are prepared, and individual counseling is offered. Patient response has indicated that an educational approach to medication is an integral part of hospitalization and discharge planning. 4 references.

000985 Shader, Richard I.; Greenblatt, David J. Massachusetts Mental Health Center, 74 Fernwood Road, Boston, MA 02115 **Clinical implications of benzodiazepine pharmacokinetics.** American Journal of Psychiatry. 134(6):652-656, 1977.

Clinical implications of the pharmacokinetics of the benzodiazepines, chlordiazepoxide, diazepam, oxazepam, chlorazepate, lorazepam, and medazepam are reviewed. Topics covered include: a comparison of routes of administration, factors influencing gastrointestinal absorption, and metabolism. Pharmacokinetic research has shown that clear differences exist among benzodiazepines in rate and route of elimination and in the presence or absence of pharmacologically active metabolites. These findings and other results of pharmacokinetic research have clinical implications in terms of dosage schedules, drug accumulation during long-term therapy, antianxiety therapy in the elderly, drug interactions, pharmacotherapy in specific disease states, and the influence of route of administration on drug action. 22 references. (Author abstract modified)

000986 Smith, Andrew; Rawlins, M. D. Whickham Health Centre, Whickham, Newcastle upon Tyne, England **Benzodiazepines.** British Medical Journal (London). No. 6084:447, 1977.

The use of benzodiazepines as hypnotics and tranquilizers is discussed in terms of advantages, disadvantages, and alternative therapies. Benzodiazepines are preferred over barbiturates because they are safer, even after overdose; they only occasionally produce physical dependence; and they are less likely to interact with other drugs. On the other hand, they may cause confusion, potentiate the effects of other depressants, produce physiological dependence, and produce paradoxical aggressive behavior. It is pointed out that psychotherapy may be a better solution than benzodiazepines or other drugs for many patients, and physicians are warned that many of the effects of these drugs are unknown.

000987 Smith, Donald F. Psychopharmacology Research Unit, Psychiatric Hospital, D-8240 Risskov, Denmark **Analysis of a school of thought on the effects of lithium on behavior.** Psychopharmacology (Berlin). 53(1):103-104, 1977.

In a letter to the editor, criticism of one approach to the problem of the effects of lithium on behavior is presented. Six fallacious arguments: false dichotomy, converse fallacy of difference, negative proof, special pleading, selected fact, and non sequitur are identified and discussed in terms of the findings of Johnson (1976). The fallacious arguments are not seen as proof that the Johnson theory is wrong. It is concluded, however, that the flaws in the argument cast doubt on the usefulness of the Johnson school of thought in understanding the action of lithium salts on behavior. 8 references.

000988 Snaith, R. P.; Hindmarch, Ian; Standing, V. F. University of Leeds, Leeds, England **Psychotropic drugs and road accidents.** British Medical Journal (London). No. 6081:263, 1977.

The involvement of persons using prescribed psychotropic drugs in traffic accidents is reviewed. A 1970 statistic that 11 to 15% of drivers involved in accidents were under the effect of a psychotropic drug is cited. The need for further research and issuance of warnings is emphasized because of the wide use of such drugs. It is also stated that such drugs have a cumulative effect with alcohol. 4 references.

000989 Thorley, Anthony; Oppenheimer, Edna; Stimson, Gerry V. Addiction Research Unit, Institute of Psychiatry, 101 Denmark Hill, London SE5, England **Clinic attendance and opiate prescription status of heroin addicts over a six-year period.** British Journal of Psychiatry (London). 130:565-569, 1977.

The current status of a sample of 128 persons for whom heroin was prescribed in 1969 at Drug Dependence Clinics in London was evaluated. In October 1975, after a mean time since self-reported first use of heroin of 11.25 years, 51% were attending clinics, 40% alive and not attending, and 9% dead. One third of the sample were still receiving heroin on prescription and 23% appeared to have received heroin without interruption since 1969. The report points to the need for career studies of addicts' lives and the need for followup interviews, especially for the 40% no longer attending clinics. 15 references. (Author abstract)

000990 Tollenaere, J. P.; Moereels, H.; Koch, M. H. J. Dept. of Theoretical Medicinal Chemistry, Janssen Pharmaceutica Research Laboratories, B-2340 Beerse, Belgium **On the conformation of neuroleptic drugs in the three aggregation states and their conformational resemblance to dopamine.** European Journal of Medicinal Chemistry (Paris). 12(3):199-211, 1977.

The conformational mobile properties of several phenothiazine (tricyclic) neuroleptics, butyrophenone neuroleptics, and related compounds as assessed in the solid, liquid, and isolated states by means of x-ray diffraction, nuclear magnetic resonance, and quantum chemical techniques, respectively, are established. The problems encountered in receptor mapping involving flexible molecules are considered. A discussion of the alleged conformational similarity between neuroleptics and dopamine (DA) in the transconformation is presented. It is suggested that further experimentation is necessary before any definite conclusions can be reached about the correlation between the ability of the neuroleptics to mimic portions of the DA molecule and their antipsychotic activity. 102 references. (Author abstract modified)

000991 van Praag, H. M. Department of Biological Psychiatry, Psychiatric University Clinic, Groningen, The Netherlands **MAO inhibitors and central monoamine metabolism.** In: van Praag, H., Depression and schizophrenia. New York, Spectrum, 1977. 260 p. (p. 39-42).

Studies in animals and in humans of the effects of monoamine oxidase (MAO), inhibitors on central monoamine (MA) metabolism are reviewed. Research has indicated that the following characteristics of the MAO inhibitors make them useful in treating depressions: 1) virtually all of them inhibit both the type A MAO (which uses serotonin (5-hydroxytryptamine, 5-HT) and noradrenalin (NA) as substrates and is selectively inhibited by clorgyline) and the type B MAO (which uses beta-phenylethylamine as a substrate and is selectively inhibited by deprenyl); 2) they block the degradation of MA in the brain; 3) they increase MA concentrations in the brain; 4) they enhance the increase in MA concentration resulting from the administration of MA precursors such as L-DOPA and 5-hydroxytryptophan; 5) they change the catecholamine (CA) degradation pattern so that deaminated CA metabolites are decreased and methylated CA metabolites are increased; 6) they increase extracellular concentrations of MAs; 7) they decrease MA turnover; and 8) they probably inhibit MA uptake. In humans, a positive correlation has been demonstrated between the degree of MAO inhibition and the degree of clinical improvement. It has also been suggested that clinical improvement may be positively correlated with the degree of MA uptake inhibition. It is posited that the development of MAO inhibitors with a selective action on one type of the enzyme may produce effective antidepressants with fewer side-effects than the broad spectrum drugs currently in use.

000992 Vandam, Leroy D. Peter Bent Brigham Hospital, Boston, MA 02115 **Morphine sans the gift of Morpheus.** New England Journal of Medicine. 296(13):750-751, 1977.

A Veterans Administration Cooperative Study Group report on the use of a euphoretic drug and morphine in pain relief is described and implications suggested. The study group enhanced analgesia obtained by morphine with dextroamphetamine while simultaneously countering somnolence and respiratory depression, and the advantages, disadvantages, and unanswered questions in their study are suggested. It is pointed out that the study may provide useful knowledge in that so far as analgesia is concerned, the sympathomimetic amines, amphetamine among them, owe their actions more or less to the release of endogenous catecholamines, both centrally and peripherally. Epinephrine has been shown to have analgetic properties. Thus, as with psychotherapeutic drugs, endogenous release of bioamines alters mood and may alter the affective component of pain at receptor sites or by way of the synapses involved in processing. 2 references. (Author abstract modified)

000993 Venulet, Jan. Division of Clinical Pharmacology, Department of Medicine, University of Geneva, Geneva, Switzerland **Rational prescribing of drugs.** International Journal of Clinical Pharmacology and Biopharmacy (Munchen). 15(4):151-154, 1977.

Criteria for the rational prescribing of drugs are discussed in the context of social pharmacology. A rational prescription is defined as one that proposes the best pharmacological approach to obtain the therapeutic objective. Achieving this goal requires a careful consideration of factors relating to the patient, the disease, the medication itself, and the doctor, and sources of information regarding such factors are discussed. Concepts of risk/benefit and cost/benefit are also relevant in the therapeutic decision. To assure the compliance of the patient, which is necessary for adequate drug therapy, the doctor must understand the patient's personality and sociocultural background. It is pointed out that social pharmacology helps the doctor appreciate and understand the role of such factors and to utilize them for improvement of therapeutic results. 11 references. (Author abstract modified)

000994 Vrhovac, B. Department of Medicine, Unit of Clinical Pharmacology, University Hospital Zagreb, Kispaticeva 14, Zagreb, Yugoslavia **Placebo and its importance in medicine.** International Journal of Clinical Pharmacology and Biopharmacy (Munchen). 15(4):161-165, 1977.

The placebo effect is discussed in terms of its existence in clinical drug trials, the factors that elicit it in treatment, and the justifiability of using placebo. It is pointed out that therapeutic effect is a sum of therapeutic efficacy, the psychic patient/doctor relationship, and the patient's expectation from the treatment as a whole. In clinical drug trials, placebo is used to discriminate the pharmacodynamic drug action from the placebo effect. In treatment, the appearance of the drug, its presentation, name, and cost may contribute to the placebo effect. The effect is especially pronounced in diseases where pain is a major symptom and in psychosomatic diseases. The extent of the reaction also depends on characteristics of the patient. It is argued that use of placebo in therapeutic drug trials is justified only if no effective therapy exists or if the disease to be treated is trivial. Placebo is also justified in mild mental depression and in cases in which the diagnosis is known, no drug is necessary, but the patient insists on a prescription. 31 references. (Author abstract modified)

000995 Waldron, Ingrid. 222 Leidy Laboratory/G7, Department of Biology, 38th and Hamilton Walk, University of Pennsylvania, Philadelphia, PA 19174 **Increased prescribing of Valium, Librium, and other drugs -- an example of the influence of economic and social factors on the practice of medicine.** International Journal of Health Services. 7(1):37-62, 1977.

Factors other than established therapeutic efficacy (such as social and economic factors), which influence the prescribing of Valium and Librium which may result in increased rates of illness and death and inflated patient costs, are reviewed. It is posited that the rapid rise in the use of Valium and Librium has occurred during a period of rising social stress and that the drugs are frequently prescribed for patients who go to doctors with social or other nonmedical problems, often in lieu of attempts to resolve the underlying problems. The decision to prescribe is seen as not only a consideration of therapeutic benefit, but also one of nonmedical factors such as the profit motivated promotional activities of drug companies. It is suggested that the widely used source of drug information, the Physicians' Desk Reference, overrates the therapeutic value of Valium and Librium. It is concluded that solutions to this problem depend on far reaching restructuring of social and economic relations between the pharmaceutical industry and government. 123 references. (Author abstract modified)

000996 Whieldon, David. no address **How benzodiazepines work.** Practical Psychology for Physicians. 4(8):15-17, 1977.

The behavioral and metabolic effects of the benzodiazepines, the most widely consumed of all medications, are reviewed. Prescribed largely to control anxiety, the benzodiazepines include diazepam, chlordiazepoxide, oxazepam, clorazepate dipotassium, chorazepate monopotassium, prazepam, and flurazepam. Effects of the benzodiazepines on norepinephrine, serotonin, GABA, as well as their effects in the cerebellum, spinal cord and limbic system are reviewed. Antianxiety and depressant effects of the benzodiazepines are discussed.

000997 Whitehead, Tony. Bevendean Hospital, Brighton, England **/Treatment of prisoners in England's jails./ A bird in a twisted cage.** Health and Social Service Journal (London). 87(4554):1182-1183, 1977.

A report on George Ince, a convicted robber who, after an escape attempt, was placed in solitary confinement and given large doses of Largactil, is presented and used to elucidate shoddy conditions and poor psychological treatment in many of England's prisons. Types of psychological control used include excessive doses of psychotropic drugs, sensory deprivation, electroconvulsive shocks, and other abuses of behaviorist theory. The need for the prisoner's consent to drug treatment, and the use of drugs for therapeutic purposes, rather than for behavior control, is emphasized.

000998 Wilcox, J. B. University of Otago Medical School, Dunedin, New Zealand **Psychotherapeutic prescribing patterns in general practice.** New Zealand Medical Journal (Dunedin). 85(587):363-366, 1977.

In order to characterize New Zealand psychotherapeutic prescription patterns in rural and urban general practice, 25,362 prescription items dispensed by pharmacies in the rural town of Ashburton and in in the city of Dunedin were analyzed. Data indicated that one item out of every eight written in general practice is for a psychiatric symptom, and that of these psychotherapeutic agents, almost three out of every four are written for adult women. In addition it was shown that the consumption of psychotherapeutic agents in the urban environment of Dunedin is significantly higher than that in the rural town of Ashburton. 3 references. (Author abstract modified)

000999 Windsor, D. A. Library, Norwich Pharmaceutical Co., P.O.B. 191, Norwich, NY 13815 **Adverse-reactions literature: a bibliometric analysis.** Methods of Information in Medicine (Stuttgart). 16(1):52-54, 1977.

To analyze the adverse reactions literature for five bibliometric traits, 3040 papers reported in the FDA Clinical Experience Abstracts during 1972 and 1973 were examined. Most papers (71%) were written by two or more authors. Adverse reaction words appeared in most (64%) of the titles. Almost all (99%) of the papers had drug words in their titles. Most (62%) of the papers had four or fewer pages. The vast majority (91%) of papers had references; of these, the median was 11 references. A generalization was postulated: if the literature on a drug is being monitored by title searching only, most of the papers reporting adverse reactions to that drug will be obtained. 16 references. (Author abstract)

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